UNITED STATES DEPARTMENT
OF AGRICULTURE

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NATIONAL ORGANIC STANDARDS BOARD
SYMPOSIUM

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Tuesday, April 18, 2006

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The symposium met in the Ramada Conference Center, 1450 South Atherton Street, State College, PA, at 1:00 p.m., Robert Anderson, Facilitator, presiding.

PANEL MEMBERS PRESENT:

ROBERT ANDERSON, Facilitator
JAMES B. CROPPER, USDA Natural Resources Conservation Service
GEORGE KUEPPER, NCAT, ATTRA
CARL POLAN, Dairy Science Department, Virginia Tech
KATHY J. SODER, USDA Agricultural Research Service
LINDA TIKOFSKY, DVM, Cornell University
ANN WELLS, DVM, Springpond Holistic Animal Health

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STAFF PRESENT:

BARBARA ROBINSON
MARK BRADLEY
VALERIE FRANCES

I N D E X

P-R-O-C-E-E-D-I-N-G-S

(1:08 p.m.)

FACILITATOR ANDERSON: It is my pleasure to introduce Barbara Robinson.

MS. ROBINSON: Good afternoon. All right, that will be the last time you do that.

(Laughter.)

MS. ROBINSON: I want to welcome everybody to Pennsylvania and to this Dairy Symposium. I'm glad to see that we have managed to get this all organized, but it is in no small way thanks to the National Organic Standards Board, in particular the Livestock Committee and Mike Lacey, who couldn't be here today, the chair, but in his absence, Hugh Karreman is the acting chair of the Livestock Committee, and so without further ado, I want to introduce Hugh to you, so go ahead Hugh.

MEMBER KARREMAN: Thank you, Barbara. I don't want to take any extra time than needed, but I would certainly like to

introduce Bob Anderson, our moderator for the afternoon, and it is honestly a high honor to introduce Bob.

As a matter of fact, probably my very first contact with organic agriculture was when I was a little suburban kid outside of Philly, and we went up to Walnut Acres back in the late seventies, and I imagine Bob was up there, so I think you have been part of my path in this organic stream, here.

So, in any event, I would like to give a little biographical sketch of Bob Anderson right now. He has been, for over 35 years, hands-on experience in all facets of organic agriculture, organic food production, processing, marketing, and retailing, as well as leadership experience in the development of national organic policy standards and organic certification.

He is the founder of Sustainable Strategies, advisors in food and agriculture, and currently is a strategic advisor to

organic agricultural initiatives and organic industry projects, as well as a USDA farm agricultural service in the United States Department of State.

Until 2002, he was president of Walnut Acres Organic Farms, one of the founding and most respected organic food businesses in the United States. Bob's co-developed a food security program that guides food processors, handlers, and producers through the development of comprehensive food security plans that focuses on crisis prevention, preparation, and protection in the era of international trade and bio-terrorism.

He is a recognized authority on organic farming, organic processing, organic foods, organic certification, and international trade. He served as the United States Secretary of Agriculture as an advisor for organic agriculture and international trade and served as a chairman of the National Organic Standards Board.

Bob is the first organic industry representative appointed to the Foreign Agricultural Service Agriculture Trade Advisory committee and was recently reappointed to the food processing ATAC. He is a former director and past president of the Organic Trade Association.

During the comment periods for the proposed National Organic Rules, he was a primary spokesman for the National Organic Standards board and the organic industry, and I think at that, I will let Bob take the mic.

FACILITATOR ANDERSON: Thank you. Before I say anything else, that Blackberry -- that Blackberry is not mine. It is one that was found out in the hall, so if somebody is missing their life link, we have it.

(Laughter.)

FACILITATOR ANDERSON: Well, welcome to springtime in Pennsylvania. It doesn't get any more beautiful than today, here, and it is our pleasure to be the hosts

for this Dairy Symposium. It is also very fitting that this symposium is being held here in Pennsylvania.

Pennsylvania is the home to a lot of organic production, especially dairy, and Pennsylvania ranks third in the nation in organic dairy production. This highly-regarded -- this -- and the foundations of U.S. organic agriculture had their beginnings in their rolling valleys with both Rodale and Walnut Acres pioneering the way.

And welcome. I want to welcome you, too, to Penn State, the domain of the Nittany Lion, Joe Paterno, and Penn State University. This highly-regarded land grant university is home to a premier college of agriculture, and Penn State Cooperative Extension is recognized worldwide for its work in agriculture.

I was just recently in Armenia, and I met no less than four Penn State extension agents working there in one way or

another. It is my pleasure to introduce you to Daney Jackson, the director of Penn State University's cooperative extension. Daney?

MR. JACKSON: Thank you, Bob. It's my pleasure to welcome you to Happy Valley. This is, as Bob said, this is a beautiful time of the year in the Happy Valley area, and it is especially great after having a successful football season last fall.

This is my -- I started my fourth year at Penn State, and the first couple of years were not quite as fun in the fall as they were this year, but they have been great this year, and I really learned what it is like to have Nittany Lion pride. I encourage you to get by our campus, visit our campus. It's a beautiful time of year.

There are a lot of things going on with students right now. It's the culmination of the academic year, so we are heading into stressful times for some of them, but it's also a lot of fun times. I encourage you to

go by and visit our creamery, another thing which we are pretty famous for, so I encourage you to get by there.

I want to welcome you here. We are really glad to have you here. We are really glad to have all of you, especially the NOSB. We're glad to have you in the state college area and looking at some of the issues facing organic agriculture in Pennsylvania. We believe that organic agriculture, in particular, is a growth area for Pennsylvania agriculture.

It is an area where we see great promise. We think there is going to be significant growth in the market of opportunities, and also some challenges we have to overcome, but also there is going to be a lot of opportunities there for us when we are innovative and can come up with the answers to some questions that you may have through our research programs and help with our education programs.

We are encouraging our faculty and staff to get educated, to get involved in some of the programs related to organic agriculture as well as other types of -- and value-added programs, looking at community agriculture, community-based agriculture.

We are looking at opportunities for making some investments. It is a difficult time for us to be making investments in new programs, but we do believe that this is an area that we need to be investing in. We have put some investments into the programs over the last few years at a time when we have declining resources and have actually eliminated almost 20% of our permanent work force over the last five years, so we are challenged, but we are trying to meet some of the challenges.

We have dedicated some of our land resources to some projects. We don't have anything, to my knowledge -- Barry, you may tell me, in organic dairy at all, do we?

Hopefully, that will change sometime soon.

Your support and encouragement for our programs and our faculty to get involved and stay involved in programs that are important to you are very helpful to us in administration to encourage growth in that area, so we encourage you to get involved with our programs and stay engaged and talk about the things that are important to you so that our faculty and our educators do get involved.

We think that there are some great opportunities in the future here. We would like to see that growth in the programs, and hopefully, we want Penn State to be an emerging leader in the area. Bob said we are third in organic dairy, so hopefully we will be number one in organic dairy real soon, so -- and hopefully that will be some great increases in milk production and products for families in Pennsylvania.

So, I want to welcome you here. I apologize for having to leave pretty soon. I

have a -- I'm serving actually on a panel across town of another meeting in a few minutes, with the Ag Bankers Association. I'm not sure why they wanted me on the panel, but I guess I'll find out real soon.

So, welcome to Pennsylvania, welcome to the Happy Valley area, and I hope you have an opportunity to visit our campus. We're excited to have you here, and I hope you have a very fruitful and productive meeting over the next couple of days. Thank you.

FACILITATOR ANDERSON: Thank you, Daney. We will be looking forward to the ribbon-cutting on the organic dairy project. Well, this is the Dairy Symposium. It is two days, and it is a little bit like deja-vu for me, you know, I've been to a lot of these meetings for many, many years, and I think this is one of the more important seminars we've had in a long, long time, and it will be on organic dairy production and the role of pasture for organic livestock, particularly

ruminants, and especially dairy cows.

As you know, USDA has issued and announced an advanced notice of proposed rule-making, which openly asks for information and guidance on many important issues regarding organic dairy. We are here today as part of an information-gathering process, and at the beginning, very much at the beginning of the process.

Today, we will focus on the big picture of pasture and resource-management and livestock health. We've got a table of people very, very experienced, with lots of expertise. The purpose of all of these meetings is to provide the NOSB and the national organic program with information as they consider the issues that are facing us today.

Tomorrow, we will begin with, in the morning, at eight o'clock sharp, with people who are actually working the land, working their farms, herds, and making and

processing organic dairy products. We will follow by certifiers, who are charged with auditing and verifying organic dairy products and practices, and we will conclude with presentations on consumer expectations and perceptions.

It's a little bit about the process so that we are all comfortable with how this is going and how we will go. Under all of this lies the importance of understanding the implications and the impact of pasture regulations on resources, dairy animals, producers, processors, certifiers, and ultimately, the consumer.

We have lots of informed presenters here to address the questions raised in the ANPR. NOSB and NOP are here to listen and broaden their understanding as they weigh the issues and develop recommendations for the Secretary of Agriculture.

This is primarily an NOSB/NOP meeting, so the symposium will occur very much

like an NOSB meeting, with comments and questions coming primarily from the board. However, public input is very important to this whole process, and so, we will -- and the ANPR clearly encourages public comment.

So there are three ways -- we will -- as the -- after the presentations in groups, the board and NOP will have the opportunity to question the and comment to the presenters, and as time permits, we will take questions on written cards, and those will be -- come to queue in the livestock committee, and we will go through that, and they will bring those questions to me.

We will answer as many of those as possible, but I assure you that if -- we will read as many, and if we can't address all the questions, we will read as many as possible, and if we can't answer all of those or address all of those, they will be scanned into the public record. So every question will be a matter of public document.

The other is that it is very important to understand that there is a public input session at the beginning of the National Organic Standards Board meeting tomorrow, and I understand that already, six and a half hours of testimony or presentations are already lined up for tomorrow, and at five minutes a piece, I didn't do the math, but that's a lot of people.

So, it's great that everyone is here and having input. And finally, there is the opportunity to make written comments, and all comments, whether they are written, whether they are oral, whether they are read in, will be a part of the public record, and they will all be weight equally. So, however, we ultimately make our presentations. We will be heard.

Written comments, as a note, on the ANPR, are due on June 12th. However, that is just the beginning of the process because this is the proposed rule-making process, but

if you want to comment on this particular phase of the ANPR, then it is June 12th is the deadline.

And once again, I do want to say that all comments will be weighed equally, no matter how you make that presentation. Ultimately, we are going to focus on three questions, and they come from the scope of the ANPR. And the first question, the USDA is seeking input on the following issues, and I will read these.

Is the current role of pasture in the NOP regulation adequate for dairy livestock under principles of organic livestock management and production? Is the role of pasture adequate for other types of organic livestock? That's question number one.

Number two. If the current rule of pasture as it is described in the NOP regulation is not adequate, in your opinion, explain what factors should be considered to

improve the role of pasture within the NOP regulation. And please provide any available evidence that supports your view.

And three. Which parts of the NOP regulation should be changed to address the role of pasture in organic livestock management? And I won't read the whole thing, but it -- the various sections are cited where those occur, including production, handling, feed, and health care and living condition.

And ultimately, should the organic system plan requirements be changed to introduce a specific means to measure and evaluate compliance with pasture requirements for all producers of dairy or other livestock operation, or should a new standard be developed just for pasture alone?

So those are the overriding questions that we will all be grappling with, but we will start with our presentation. It is really my pleasure to be here, and we are going to first talk about pasture and pasture

as a resource-management, and we have three panelists here now.

George Cooper is the -- has an MS in Agronomy from the University of Wisconsin. He's got -- has over 25 years of experience in sustainable and organic agriculture. His work as a farm manager, research, and educator, primarily in the non-profit sector, and he is currently a program specialist for the National Center for Appropriate Technology, on the ATTRA project and has developed educational and compliance materials for the National Organic Program. George?

PANELIST KUEPPER: Okay. I guess we are supposed to use the microphone, right? Okay, next slide. Okay. People can hear me, huh? Okay, great. It's a real pleasure to be here. I thought by way of clarification, I am with the National Center for Appropriate Technology, and not many people hear about that, but you do hear about the ATTRA project quite a bit.

ATTRA is a federally-funded project. We are called the National Sustainable Agriculture Information Service, which really defines what we do. We develop and distribute information on sustainable farming, and the organic community is a big consumer of materials that we produce and distribute.

In terms of my presentation today, I mean, I am really a row -- pardon me, a row crops agronomist, and I am going to stick to something, you know, I know a little bit more about, and that is the role of forages, you know, pasture or hay, within the traditional organic system.

To sort of give a little bit of background on that, a little bit of history, if we were looking for kind of a consistent management philosophy for organics that is carried through from the beginning, we would be looking at something called Humus farming, which is an approach to farming that really

coalesced as a single idea around the 19-teens.

It's focused on this idea of returning organic matter to the soil, of building the organic content of the soil and all the organisms and everything that work to make the soil a living organism. That's the basis of fertility.

Around the 1940s, Humus farming in the vernacular became organic farming. That's when Robert Rodale, I mean J.I. Rodale and a few others sort of coined that term and put it into use. The first real study of Humus farming become organic farming was done in the mid-seventies out of Washington University, and one of the former NOSB members here, Willy Lockevetz, was the director of that study, and, you know, I was real fortunate. I happened to be on that team, got hired on there, you know, and it was sort of the high point of my otherwise misspent youth.

(Laughter.)

PANELIST KUEPPER: But yes, it was a great study, ran for about five years. At the time, a million dollars bought a whole lot more than it does today, but we covered a lot of ground. The economic findings were probably the most significant part of this study. Just finding that there was commercial agronomic crop production in the corn belt was a significant finding.

But what really kind of shook everybody was how well these farmers were doing economically. They were doing about as well as their conventional peers, and that was sewing into the conventional market because at that time, the organic market really didn't exist in the mid-west. That was to come later.

You'll note -- I footnoted it there, I'm referring to a study now the results of which are 25 to 30 years old, but I find as new studies of organics are done that basically, they are just confirming the

findings that we had way the heck back, and another reason I refer to the study is it's been the only one that covers as much ground as I hope to cover here.

I want to talk mainly about the environmental impacts of this type of organic system. When we studied it, we found reduced energy consumption. I believe it was two-fifths the amount of fossil fuel energy was used in organic crop productions as used in conventional production.

There was a third less erosion on organic farms, and that was based on the crop mix alone. When we studied those farms, and this is a little bit of a side note, all the organic farms that I visited were using some form of conservation tillage at the time. Either mulch tillage or ridge tillage, and this was almost unseen through the rest of the corn belt.

So really, you know, and to hear the debate these days of no-till versus

organic. Organic is sorely mischaracterized in that debate. I think that's an important thing for people to realize.

Higher carbon sequestration. You know, definitely an issue related to global warming. No depletion of fertility. Again, one of the criticisms of organics is that it mines soil nutrients. Well, we did not find that, and subsequent studies like the ones done by Davis, here -- we are finding this is a regenerative approach to agriculture. That it actually is building soil fertility.

You know, Robert Rodale, I think it was, tried to coin the term "regenerative agriculture." It just didn't catch on, but -- and I'm sorry that it didn't because it really did apply. And another, speaking of Rodale, one that I site up here is the long-term Rodale study.

One of the things that they did that we didn't do is look at nutrient leaching, and again, under an organic system,

you find a lot less nutrient leaching. Again, related to all the ground water contamination issues, and the leach nitrate is the big problem. The Gulf of Mexico Dead Zone, related to this same issue.

I will mention one back thing on that slide. All those environmental benefits for organics, notice that it didn't even mention pesticides yet? We are talking about everything but. What I wanted to tie this to, one of the things that we were asked to reference as speakers, is, you know, what do consumers expect?

Well, they do expect environmental friendliness, and this is something that obviously organic agriculture is capable of delivering on. You know, we are working on something really good the consumers really do want.

Tying that into forages and animals, what I am basically going to say and what the thrust of what I am going to talk

about is that the forages in an organic system are the primary aspect that delivers on these environmental benefits.

This is a real typical rotation. If you are not used to looking at crop rotations, this is the kind that we saw in the corn belt back in the seventies, and it still exists, and they are still very workable today. If you have not looked at them before, imagine a farm with six fields, and one of these crops or crop stages is on each of those fields, and over time, every year, that sequence changes, okay?

Up here I show alfalfa as the forage crop. That could be clover. It could be clover and grass, alfalfa and grass, lespedeza, any mix of legumes and grass. Just think forage where you see alfalfa. In this system, what really drives the system or makes the system work is nitrogen.

Nitrogen is the limiting nutrient in organic systems, just like it is in

conventional systems, only in an organic system, you grow the nitrogen rather than bringing it in as in hydrous ammonia or some derivative of an hydrous. That nitrogen is fixed mostly in that phase, the phase where the forages are out there.

It is the legumes that fix nitrogen in symbiotic relationship with bacteria. That nitrogen then carries over, feeds the corn, even some of the soybeans. You know, soybeans are a legume too. However, in harvest, you remove more nitrogen than you actually fix on a soybean crop, so it does its part in the system, but it's a much smaller part than most people understand.

Livestock here, livestock manure, yes, there is nitrogen in the manure, but where did it come from in the first place? It was fixed over here by the forages. Possibly it went into the corn, and then it went into the livestock, but that -- the livestock are really just recyclers in the system.

I make that point because from here now, we are going to what the environmental benefits actually are, and what the forages contribute. And that starts with the factor of nitrogen and that fixation. When we did the energy analysis on organic farms, if you looked at field consumption, tracked field consumption, organic farms tend to consume more.

The main energy savings comes from the lack of nitrogen fertilizer and the fact that they are growing an enormous amount of fossil fuel energy in the form of natural gas that goes into producing nitrogen fertilizer. That is where the main benefits are coming out. In terms of carbon sequestration, it is during that period of time when you have perennial forages on the field that you are building most of your carbon.

In part because of the longer photosynthetic period, but also because of not tilling it up and burning the carbon out of

the soil. Increased nutrient bio-availability. Perennial forages, particularly the taproot of legumes, are drawing nutrients from the subsoil, bringing it up, making it more bio-available to subsequent crops.

Reduced erosion. Again, you are not tilling during this period of time. That's where most of that benefit comes from. And reduced leaching. And this is exciting to me. Perennial crops, just generally, but particularly in forages, are like an ongoing catch crop, preventing nutrients from leaching.

You look at Giles Randall's work, out of southern Minnesota. When you compare row crops with perennial crops, he was finding thirty to fifty times as much leaching of nitrogen under row crops as under your perennial forages. That's thirty to fifty times. That's significant. It makes a lot of difference.

It kind of goes without saying

that forages and livestock, you know, kind of co-exist. You can see where corn, soybeans, small grains can be grown as food crops or for other purposes, but generally when you are growing forage, you know, with the exception of alfalfa tablets or something like that, you are pretty much growing something that is going to be feed for livestock.

If you take livestock out of this system, the motivation for keeping perennial forages to the degree that we have here, where they are actually part of three seasons on a field, that motivation is reduced, and what I see on farms that are stockless is a tendency to reduce the amount of perennial forage that they have in systems, increased reliance on inputs or annual cover crops, you know, annual legume crops for nitrogen.

And I'm not saying that stockless farms can't be made sustainable and work just fine, but their ability to be as sustainable, to contribute the same degree of environmental

benefit that we brag on is going to be limited. Yes, basically, that is the point that I was trying to get to is this tie between the environmental benefits of organics and the forages in the system.

Seeing it on the farm level, where the crops are produced, probably the issues are not as great as they are where that feed ends up. In concentrated livestock feeding, there are the issues, of course, of manure concentration and all of that. That's not where I was going to go on my presentation, anyway.

I was given the two minute sign. I just want to point out that, on the whole within the ATTRA project, we keep a lot of information on hand. Updated information on forage systems. We consider them among the most sustainable systems, and I'm down to one minute.

And just like, you know, vodka isn't just for breakfast anymore, grazing

isn't just for your ruminants. We have a lot of information on pastured poultry. Our livestock workbook that we developed with NOP funds. First thirty pages of that focuses on pasture because we wanted to keep that tied to livestock production. And on that, I'll conclude. Thank you.

FACILITATOR ANDERSON: Thank you, George. We will just, as a note of housekeeping, there are cards throughout the audience, so as you have them and you have a question, then by all means, hold it up, and Valerie will pick it up.

MS. ROBINSON: I'm the runner, so if you've got questions, if you've got them on your cards, put your hand up and I or someone will walk up and down -- and make sure to gather them up. So -- am I speaking loud enough? Probably not.

I'm the runner for cards. So I passed them out. There's more. If you've got cards you want to make sure get up here, the

livestock committee is going to be processing them. I'll be gathering them. So, you know, make sure I know you've got a card or pass them up to the ends. That will help too.

FACILITATOR ANDERSON: Next speaker is Lisa McCrory. Lisa is from Vermont, NOFA Vermont, and she has been there since 1995, working as an organic dairy and livestock advisor. She has been providing workshops and conferences and actual on-farm technical assistance to farmers interested in organic agriculture and grazing.

So, she helps producers develop or intensify those practices, and prior to her work with NOFA, she was at the University of Vermont and a pasture-management consultant with Pasture Research and Technicians. So Lisa, in addition to being an academic and a student and a teacher, also operates a farm with her husband Carl Russell, where they use draft animals for logging and field work and raise meat and milk products using primarily

pasture and harvested porridge. Lisa?

PANELIST McCRORY: So, it's great to be here. I'm going to -- I do not have a Powerpoint presentation. I am not that technologically advanced. This year, though, I promise. I have a visual, though, that will help, and I have a couple of copies of my -- I answered all -- I was given -- all of us were given a bunch of the draft of -- the advance notice of proposed rule-making was passed onto all of us who are speakers, and I decided that I would take it upon myself and answer every single pointed question through the document for good practice.

But, in summary, there are three key questions that they did ask, and so I thought I would just read that out loud so you can know where I'm coming from as a grazing consultant, as somebody who works out of NOFA Vermont with our Vermont producers, based on my experience.

I've worked with organic producers

throughout the northeast and kind of spreading into the west as I've been or was initially very involved with NOFA when it was getting off the ground. So I feel like I'm hearing from a lot of producers, and I sat in on a session this morning and yesterday, really getting feedback from producers to just get a sense of what the realities are within what the National Organic Program should be enforcing.

So the first question about the current role of pasture in the NOP regulations -- is it adequate for dairy and livestock under the principles of the organic livestock management and production. Is the role of pasture adequate for other types of organic livestock?

And I would say no, it's not adequate. At this point, the current role of pasture in the NOP regulations is not adequate for dairy and livestock. The role of pasture needs to be more clearly defined for beef and

dairy.

The recommendations that I would put forth -- first, I would like to say that I fully support the recommendations that have been submitted by the National Organic Standards Board. They presented a draft document in November of 2005 which was really a compilation of all the recommendations that they have been submitting since 2001 on pasture recommendations.

And my, you know, I was reading all of this information as I was preparing, and the question that just kept hitting me over and over again was we've been giving feedback to the National Organic Program for five years, now, and still nothing has been implemented, so a lot of this is all repetitive.

There are a lot of resources, even within the National Organic Standards Board's draft documentation, there are a lot of references of research documentation as well

as just good material on the nutritional benefits, the environmental benefits, grazing strategies, the possibilities, and also consumer assurance. What do the people that buy organic milk, what are they expecting when they purchase a carton of milk?

I was seeing some example cartons that have been passed around today and was kind of horrified to see what their testimonial is on the carton, knowing where that milk is coming from, and personally, I would like to see some level of standard guidelines that everybody abides to that can assure the consumer what they are purchasing and allow for a strong integrity to the National Organic Program.

So, today is such an important day. My recommendation is I support the NOSB's recommendations, which are saying that there should be a minimum of 120 days per year that ruminants should be grazing on pasture, and within those 120 days when they are

grazing on pasture, they should be consuming a minimum of 30% of their dry matter needs on pasture. That's just a minimum, and that's for all ruminant stock six months of age and over.

There's been so much evidence to support the need for stricter pasture standards and its associated benefits, soil health, livestock health, energy usage, consumer confidence and assurance, nutritional benefits, that it seems redundant to continue feeding a lot of additional resources and references.

What I'm getting at is I've included within my handout a lot of recommended readings to substantiate the benefits of pasture, but I think all of those recommended readings that I have put forth also was in the NOSB document. There are so many things, and it was great to hear what George had to share with us as well.

So the big thing that we were

talking about is if we are going to recommend a minimum dry matter intake, it needs to be -- in some way, we need to demonstrate that this is do-able. But I think without having a minimum amount of dry matter intake on-pasture, it is going to be really hard, without some sort of measurable thing, the words like "significant."

There are a lot of ambiguous words within the language that we need to replace with a measurable, so my feeling, from my experience as a grazing consultant and a resource person for NOFA has been that the 30% dry matter intake is a measurable and a do-able that we can write into the Organic Systems Program guidelines.

So what I did, with the help of Sara Flack -- I want to make sure that everybody can see this. But we wanted to make an example format that people could start to use if they wanted to estimate the dry matter needs on their farm.

So, this is just one example of how we do it when we're on farms, where, for example, I'm using, for example, a thousand-pound cow producing about fifty pounds of milk. Her average dry matter intake needs are going to be about three percent, and this is based on some literature guidelines that we had, so I'm keeping it nice and simple.

But if this thousand pound animal needed three percent of her -- was consuming three percent of her body weight, simple mass says that she's eating thirty pounds of dry matter a day. Now, out of that thirty pounds a day, we are asking our organic producers to make sure that 30% of that thirty pounds is harvested -- is received by harvesting grass on-pasture.

Do the math, that's nine pounds a cow a day. As fresh pasture, that's more like -- it's four times that number, on average, so you are asking about -- for every animal to eat on average about 36 pounds of grass on-

pasture. So, that's a way to make a simple calculation on a farm to help them estimate.

You know, you figure out how much do their cows weigh, on average, percent of their body weight is such-and-such, and you calculate down. Now, there is another way to make this calculation. We can go backwards, and this is a worksheet that NOFA New York actually has on hand.

Dry matter intake by subtraction, where we would go work with the producer, find out what are you feeding in the wintertime when your animals are in confinement. We convert everything on a dry matter basis and get the total, and then we figure out what are your cows getting when they are on pasture, what is the feed that you are giving in the barn.

We are getting the total from that, and we are subtracting one from the other, and you are going to get the amount of dry matter that they are actually harvesting,

from pasture. So there's two different ways that we could quickly come up with, as a system, that farmers can use as a way of documenting how they are harvesting their dry matter off their pasture.

I know that these are just two simple examples. I think it's really possible for us to create a formula or a worksheet that is included within an inspection manual or within the inspector's report or certification application -- time? I don't have any other flip charts. Those are the only two.

So, I wanted to at least provide that to the audience and to the producers to look at a couple of examples to give us a starting point to create some efficient worksheets so that documentation can take place. And I know there are many resources within our states. Our NRCS agents, our extension agents, the different educational branches of the NOFA's PCO, NOFA Vermont, NOFA New York, Oregon Tilth, MOSA.

I think that we can all work together and find out how we can figure this out with our producers. I think that is within the organic system plan, and within our certification application forms, we are collecting almost all of this information already.

Everything that we're -- we're collecting everything except for asking percent dry matter within our current record-keeping system, so we really aren't asking for much more than what is already -- what already exists in the program, so I just wanted to point that out too.

And I think that is what I have to share. I have more in writing, obviously, and I'm open to receiving questions. I guess one more little thing that I wanted to say is NOFA Vermont, when we started certifying dairies, we started back in the late eighties, and our step into the organic dairy realm was from grass-based farms trying to grapple and get a

premium product, create a premium product that the market was demanding.

We were already coming from a pasture background. Our producers in Vermont are grazing their animals for at least 150 days during the growing season. That's a minimum. And the amount of dry matter that our producers are harvesting off pasture is about 70 pounds of dry matter per day, on average.

So, agreeing to 30% dry matter is really -- we're realizing that not everybody is set up like a lot of the producers in Vermont, that seasons are different from one state to another, precipitation is going to vary from one place to another. We can do 70%, I know producers that do more than that, but not everybody is going to be able to do that.

Thirty percent, I think, is a realistic figure to shoot for that I think can encompass almost any producer within a

reasonable area. And if they get to the point where they are drawing their water sources out of an aquifer, if they are getting to a point where they -- the precipitation falling on their land is less than adequate, then I question whether or not we should be supporting organic systems in those areas.

That does not sound environmentally friendly to me, and it doesn't sound like something that our consumers would support if they were fully informed, which I know, down the road -- they are getting more informed and wanting to know more all the time.

So, we need to let them know that they are supporting something that is moving us in the right direction, and this standard would also help make that happen. So, thank you.

FACILITATOR ANDERSON: Thank you, Lisa. Jim Cropper is a 4-H management specialist with the NRCS, and it is the East

National Technical Center in Greensboro, North Carolina. Jim?

PANELIST CROPPER: Thank you, Bob. One of the things I wanted to talk about today is the prescribed grazing standard that the NRCS writes. Right now, we have the 2003 wording of the prescribed grazing standard, and since that was incorporated into some of the rules in the rule process of the National Organic Standards Board, I thought I would talk about that specifically and then show some ways that that can be used to document the fact that you are meeting whatever standards you set on how much of the forage or feed that the dairy cow is consuming is as pasture.

I won't make any position on what that percentage ought to be. I think that ought to come from the people that are directly involved in that. As a national agency where we work with all farmers, regardless of whether they are organic or

national, we have to write our standards in a very broad way so that everybody can be under that umbrella of that particular standard.

Since we are not a regulatory agency but we work with people to better their protection of the natural resources on their farms and ranches, that means also that we don't dictate policy or we don't dictate certain things to happen. We try to work very cooperatively with those people, making them understand that when they take some actions how that impacts their forage supply and how that impacts their animals, the farm resources that are there.

The prescribed grazing standard, we have a national one. Like I said, it was last revised in 2003. When we started working with the Conservation Security Program, we noticed that we had a couple of very key items that we left out of it, and we are currently now revising that standard in 2006. Probably sometime towards the end of the year, the new

one will be issued.

One thing I wanted to make clear, in some of the writings of the rules, there was mention of a regional prescribed grazing standard. There is no regional one, only state supplements. That -- those state supplements take the national standards and make them very more specific to the locale of that state, whether it be California, Maine, or Florida.

That's why, on a national level, national standard has to be very broad because we cannot get very specific without being wrong in one part of the country of another. So that's why it starts out very general and then gets more specific as you get down to the state level.

Okay. One of the key elements of the grazing practice I think that come from the standpoint of what you are dealing with today is that when we do a grazing plan for a farm, it is -- we need to take a look at what

those resources are on the place. We have to look at the climate, what do we get for rainfall, how cold does it get in the wintertime, how hot does it get to the summer. That has a big impact on what you are going to be doing in a dairy operation.

The soils, what do we have for soils? How steep are they, what is their water-holding capacity, that is the pH of the soil, a number of things like that that is going to drive that forage production there.

The other thing, then, we need to inventory is the livestock. Do we have adequate land to support that herd of livestock? If we don't, are there ways that we can overcome that, either by increasing the production on the farm, or do we have to go off-site for some additional forage supplies?

That tends to be quite different in some parts of the country than others. Here in the eastern United States, where sometimes you have to have at least the

economy of scale so that you can support your family, unless you work off the farm or something of that sort. So that sometimes becomes an issue.

You have to have a certain number of livestock to make it a good, viable enterprise, yet on the other hand, perhaps you are land-poor. So these things have to -- there are tradeoffs involved when you get into that situation.

Then the other thing we have to look at, then, okay, what forage supplies do we have on the farm? How can we improve them? In some cases, it may mean converting crop land to pasture, and we've had several producers who have converted all of their crop land to pasture. And, in that case, they are able to maximize their herd size, and then they either buy additional feed stuffs and bring it in, or they are able to rent maybe adjacent farms or something like that for their stored forage supplies.

One of the key things in the grazing plan is that forage/livestock balance, and this will be a key point that I will talk about a little bit further in another slide. The grazing plan itself -- what about a drought plan? Do you have a contingency plan if things do dry off, you don't have the feed or pasture, perhaps, out there to feed those animals. We have to consider what we are going to do in that situation.

And then the last thing is the grazing records. Lisa just mentioned a couple of different ways that you can kind of predict what you might need in the way of pasture and how much pasture that would be. Then we also have to have some records that demonstrate that that is actually what is taking place.

Okay, if we talk about that forage/animal balance, a lot of times those lactating dairy cows are supplemental-fed, and there is a big, raging controversy over that; whether it all should come from pasture or a

smaller percentage of it, whether they should feed grain, whether they should feed maybe some dry hay, maybe a partial total mixed ration, a whole number of things in that way.

Again, we don't take positions on that. We help with the farmers to decide if they are going to feed grain, then how much pasture do we need, then, to feed those animals if a certain amount of grain is going to be fed or a certain part of a partial total mixed ration being fed.

That is their ultimate decision. What we do then is try to decide, okay, if you are feeding that much supplemental feed, how much do we need to get from pasture until that grazing plan is then centered around that remainder that is going to be fed as pasture.

There are a lot of different reasons why they are supplemented. Some of it has to do with the fact that, especially in the spring of the year, standing forages are often very low in effective fiber. You can

get a test back from a forage lab, and it's going to say ADF and NDF are high, and yet the animal doesn't know that, but the grass passes through their digestive system too quickly, and sometimes you don't get the nutrients that you thought you were going to based on that.

The other thing is it's also to balance the protein, along with the carbohydrates. A lot of our -- and grass pastures tend to be very high in protein, and if there isn't more of a carbohydrate source there, that will create an imbalance. A lot of that protein will go into the room and not be converted to milk. Instead, it will be urinated instead, and then you can create hot spots in your pasture just from simply having way too much nitrogen versus the carbohydrates in their diet.

So as a result, that forage/animal balance needs to account for all those other feed stuffs before we have a good idea of how much is actually coming from pasture. And we

need to make sure that when we do that, we can calculate, then, just how much pasture will need to be allocated every day.

Okay, so if the percentage of dry matter intake of the total ration from pasture becomes a part of the NOSB final rule, then the forage/livestock balance sheet will be a good way to show what is being planned for consumption from pasture. That can be easy to calculate.

It looks kind of similar to what Lisa was talking about earlier, where we know there is so much grain being fed, maybe a little bit of hay, a little bit of corn silage, something like that. Those get subtracted off, and then the remainder becomes what is going to be the forage that is coming from pasture.

So now we know what is planned. And then, when we are done that, then the grazing records then can confirm what was actually applied. How much pasture did they

consume? One way to do that is to measure that in our rotation of pastures.

When we take -- we are going to take some animals out to a paddock, we measure how much forage is there before they return in. And that can be done either very easily with a rising plate meter, even a pasture stick if it has been properly calibrated to the pasture -- to the species that you have in that pasture.

That's simply nothing more than a yard stick, and then what you do if you don't know for sure whether it has been calibrated for your area of the country, you simply clip a square frame, convert that to pounds to acres, and then you see how many inches that was and record that on a number of occasions until you get a pretty good idea, especially if -- a pasture consultant could do that for you -- determine what an inch of forage being produced out in that pasture, how many pounds does that equate to in acre of ground.

So then, you have that way of doing that record keeping. And then, once the animals are pulled off of that paddock and go to another one, you measure what residual forage is still left out there. There may be an average of two or three inches. Again, you can measure that and get an idea of how much was left behind.

And that difference, the difference between what it was when they returned in and when they were pulled out of that paddock is going to be the amount of forage that they consumed. Then you have a real good hard number to work with. It's not so much guess-work anymore at that point.

Again, it's still an estimate because pastures do vary a lot in their composition and in their thickness of their stand from one area to another, so there might be a little error in that, but it's a lot less error than just trying to wing it based on maybe what they ate in the barn, and you are

just kind of hypothetical thinking, well, maybe they consumed thirty pounds or maybe they consumed forty pounds. Well, you don't know for sure and not quite as much as you do if you measure directly in the field.

I think that last statement is one thing that doesn't have to be overly rigorous, but it does have to be pretty representative of that paddock that you were in. So, that is -- I thought I would directly answer some of the questions based on the prescribed grazing standards, and I would be glad to take some questions when we're done here with the panel.

FACILITATOR ANDERSON: I would just like to open this up to the NOSB and the NOP.

MEMBER KARREMAN: Are we done one panel?

FACILITATOR ANDERSON: Yes, we're done.

MEMBER CAROE: I have a couple of questions for you, Lisa. First off, I was

just wondering how you deal with expansion and reduction in the herd over a season, and typically, how much of that -- I mean, what is the effect. I mean, can you have a 20% increase in the size of a herd, and how does that affect your calculations?

And also, going further with that, you average the pounds of forage per cow per day, but what period of time is that? Is that over the entire pasturing season, or is that done for a month, or, you know, what period are you actually looking at? Because in order to apply something consistently, you know, we have to talk about some of those terms as well.

PANELIST McCRORY: Okay, so I will -- am I on? I will answer the second question first. My recommendation is that, when calculations are made and represented, that it is on a per-cow, per-day basis, so the amount of dry matter per cow per day. Does that answer?

MEMBER CAROE: Yes, but you are not actually measuring how much feed other than forage they are taking in every day, individually, and calculating per day, you are taking it over a period of time, I would imagine. I would imagine that you look at the amount of outside forage -- I mean, outside feed that the herd is taking in over a couple of months as opposed to the same type of period over the winter and subtracting it out and then averaging it per day. You are not doing it every day -- you're not -- farmers aren't calculating every day.

PANELIST McCRORY: The farmers aren't calculating every day. They do know that if they've got their group of animals, they -- just like they are creating a feed ration in the wintertime, they are creating more or less a set ration that is going to meet their livestock needs when they are out on pasture, and that might change a little bit if their overall production is -- if they are,

you know, say the average stage of lactation for their herd, say that goes up during the grazing season, they might calibrate that and make sure that they are giving them a little extra pasture to meet those individual needs.

Now, to say that -- just like in the wintertime, farmers are not calculating on a daily basis what each individual cow is getting, but they could tell you what each individual cow is getting, and that's the same routine that they would be doing when they are out on pasture.

MEMBER CAROE: Right. I guess I'm not being very clear, and I apologize, but as I look at your calculations, they make perfect sense to me. I love the fact that they are very quantifiable. However, when you are talking about the subtraction, where you have what you are feeding the cows during the winter months when they are off-pasture, and what you are feeding them outside of pasture and subtracting that off -- I'm trying to

figure out the length of the period that you are calculating.

So, for the winter months, say there are three months that they are indoors for winter, you are looking at all of the feed that you feed them over three months and then calculating them down to a per day basis, correct?

PANELIST McCRORY: Right.

MEMBER CAROE: And then you are doing it for the entire season? So you are only really calculating once per season to get that average per day? Is that correct?

PANELIST McCRORY: Sure. You could calculate it just once, but like I was saying, if a farmer is going to -- you know, and the goal is that we are trying to demonstrate what the animals are going to get on-pasture for a minimum of 120 days during the growing season.

MEMBER CAROE: So you are looking at a 120-day period?

PANELIST McCRORY: Minimum.

MEMBER CAROE: Okay. That's what I needed, that's what I wanted to know. Thank you.

PANELIST McCRORY: Okay. And you had a first question.

MEMBER CAROE: It's about the fluctuation in a herd's size. So if a producer has 50 cows and then doubles their herd. You know, brings in a lot of replacement animals and doubles their herd, how do you account for that?

PANELIST McCRORY: They would have to calculate the additional dry matter needs and make sure that they have adequate pasture to meet that additional number of animals. And I will say that it's not -- at least in Vermont, I haven't seen that happen all the time. There might be one or two rare occasions when that happens, and we will help them figure out what their pasture needs are and move from there.

And like I said, in Vermont, it's -- we rarely come across situations where the animals are nearing the edge of that 30%, you know, dry matter. They are usually way above 30% dry matter from pasture, and so most of the farms, if they are adding on ten cows, fifteen cows, they've got adequate pasture to stay above that 30% dry matter intake, minimum, for those 120 days.

PANELIST CROPPER: The greatest fluctuation you might get, actually, is, depending on how the cows are freshening -- usually the lactating herd would be separate from the dry cows. And then you could get some fluctuation there, but generally, that's not really very huge.

PANELIST McCRORY: Percentage-wise, you're looking at what? Five percent?

PANELIST CROPPER: Yes. Maybe something like that --

PANELIST McCRORY: Just to give -- I mean, I'm completely --

PANELIST CROPPER: -- if they are freshening a few every month, there might be some bigger fluctuations if they are stressing maybe spring calving or they are stressing fall calving, there may be a much bigger fluctuation than that. It kind of depends on the operation and how they deal with that. Seasonal calving, they are all going to dry off at once, and that is usually at a time of year they are not going to be on-pasture in most cases.

FACILITATOR ANDERSON: Just one comment. As you ask a question, would you please identify yourself for the record? That was Andrea Caroe. Barbara?

MS. ROBINSON: Are the mics on? Barbara Robinson, USDA. I actually have three questions. Two -- Lisa, I lost a number somewhere. You were talking about the 30 pounds per day dry matter, 30% of 30 pounds, roughly nine pounds. Then you got to 36 pounds in total. What -- I missed something

there.

PANELIST McCRORY: That's -- that's -- it's nine pounds of pasture on a dry matter intake basis.

MS. ROBINSON: Right.

PANELIST McCRORY: And pasture is about 80% water, so if you multiply nine by four, you would get the as-fed -- the actual weight of the grass that they are harvesting.

MS. ROBINSON: Why am I multiplying nine by four?

PANELIST McCRORY: Nine times four -- you are adding the -- on a dry-matter basis, pasture is actually four times heavier than its dry matter weight.

MS. ROBINSON: Oh, okay. And then, secondly, you said that in NOFA Vermont, you are already asking for this information from your farmers.

PANELIST McCRORY: We are recommending -- we are encouraging farmers to -- letting them know what the NOSB

recommendations are, and we are encouraging them to monitor their pasture dry-matter intake on-pasture to see how that compares with the NOSB recommendations.

MS. ROBINSON: So do most of them, would you say -- so they are incorporating this into their organic systems plan?

PANELIST McCRORY: I would have to -- when I go onto farms, I'm -- I provide the education, so I'm not actually an inspector. I would have to defer to Nicole to see if that's actually in the inspection form. But what I do is I help them figure out what they are feeding their livestock now, what do their pastures look like, and how much pasture do they have available for their livestock.

And I help them make -- I help them make calculations based on the recommended dry-matter intake on-pasture. So I would have to defer to Nicole, our certification administrator, to know whether or not that is actually in the application

form. I don't think it is.

MS. ROBINSON: Most of your dairy farmers, you believe, are doing this?

PANELIST McCRORY: They are. They are way beyond 30%, on average.

MS. ROBINSON: My other question was, Jim, you said the NRCS standard, and I understand this, is a national standard, and there are no regional standards, but then you mentioned that there are state --

PANELIST CROPPER: Yes. Each NRCS state office generally drafts a more specific state standard to be followed in that state.

MS. ROBINSON: Based upon -- they take the national standard --

PANELIST CROPPER: Right. And generally draw it more specific standards within -- they are more -- criteria. They may include tables, for instance, that have the different grasses and legumes that grow in that state and the recommendations on stubble height that should be left once the animals

are taken off that particular pasture and put into another one.

And some -- those things are very specific to that state. They may cross some state boundaries, but as you get into further regions away from that state -- let's say, for interest, Pennsylvania versus Arizona -- you are going to have totally different species and things of that sort, and different requirements for their protection when they are being grazed.

MS. ROBINSON: We have heard in the past that a complaint of the NRCS was that it was based -- it was a standard developed for beef cattle, but I didn't hear you mention anything like that.

PANELIST CROPPER: No, no. In this particular instance, like I said, the national standard is drawn at a very kind of an over-arching way so that it doesn't get specific about any particular animal, and so it'll work with any livestock enterprise that

you have. It's just that you have to get down to the state level to get into more specifics than you can at a national level.

MS. ROBINSON: Okay.

PANELIST CROPPER: And again, that that would be more directed towards the forage species, what would be needed to keep them surviving in a pasture setting so that you are not over-grazing them and then damaging the soil resource and perhaps the water-quality resource at the same time.

MS. ROBINSON: Are those all downloadable from NRCS's website?

PANELIST CROPPER: Yes. They are actually on the NRCS website, and you can go and click on the specific state that you are interested in and get that as a pdf file or an Adobe Acrobat file.

MS. ROBINSON: When you revised the 2000 -- when you revised the national standard for 2006 --

PANELIST CROPPER: Right.

MS. ROBINSON: -- what will that do to the state?

PANELIST CROPPER: Then they will go back and look at it again and have to revise their standard as well, if there is something in there that they don't cover specifically. And the one thing that we would like to include in there, it's one of the shortcomings we found out when we got involved with the Conservation Security Program, is that we don't specifically mention that there should be grazing records kept, and so that will be in the new revision. It was an oversight, basically. Because when it came to program implementation, we have to have some grazing records. It's similar to what you are embarking on --

MS. ROBINSON: Right.

PANELIST CROPPER: -- that you need record keeping to be able to make sure that what is being specified in the rules actually takes place, and so that's why we

found out when we got involved with a program like the Conservation Security Program that we needed to do the same thing. Otherwise, there is no way of knowing whether they are doing a good job.

MS. ROBINSON: Whether there is compliance, right. Do you provide any sample worksheets in there for records?

PANELIST CROPPER: Actually, Pennsylvania's got some little pocket-sized books that do have a suggested one for dairy and also, in particular, they have one for dairy animals, and they have another one that is for beef cattle and sheep and things of that sort. So, they are slightly different in the way they are formatted.

MS. ROBINSON: Thank you.

FACILITATOR ANDERSON: Bea?

MEMBER JAMES: Bea James. I have two questions, and I will give Lisa a break and go to George first. George, what would happen in agriculture if pasture-based lands

for dairy farms were not required to grow feed, and doesn't the grazing matter also act as a natural filter for the land and the wildlife or groundwater inhabiting that land?

PANELIST KUEPPER: I'll start with the last question. Yes, the presence of forages does an amazing number of things. You talk about the filtering effect. That capture of nitrate, I mean, is one example of that filtration. Yes, it does capture a lot, and the environmental benefits, as I was trying to point out, are enormous.

In terms -- did I get your first question right? You're saying what would be the likely trend if organic farms were not growing the --

MEMBER JAMES: Right.

PANELIST KUEPPER: -- grazing land or livestock? Basically, it would have to be, you know, brought in in some form. Now, I'm not a specialist in livestock feeding, but, you know, my understanding is that there would

be definite nutrient issues. As you start shifting, take that example that I showed, that location example.

If you are also shipping that hay off, say, to a distant place, that manure is not likely to be coming back to that land, and that raises sustainability issues. You know, to keep that land regenerative, keep that system regenerative, they are either going to have to bring in some other type of input, either a local source, say, of local CAFO manures or something of that nature, or rock minerals. You know, something that, again, would meet the standard.

So it is going to make the system more dependent on outside inputs, and that will definitely change. In terms of what happens actually at the feeding site, I mean -- do those animals get enough forage? I would assume that, you know, a good plan feeding system would allow for that, but it does mess with where the nutrients go in the cycle. It

messes with the sustainability of an organic system.

MEMBER JAMES: Great, thank you. And Lisa, I wanted to ask you -- the model that you showed, the DMI by subtraction?

PANELIST McCRORY: Right.

MEMBER JAMES: Do you have any farms that are currently using that model?

PANELIST McCRORY: That model I actually stole from NOFA New York this morning, and they use it regularly with all of their producers.

MEMBER JAMES: Oh.

PANELIST McCRORY: And from what I've heard, there have been no complaints about doing that. It's been useful. When -- and then, as an individual, when I go on a farm or to co-workers that also do dairy farm visits, we will use that system regularly in helping farmers calculate what they are feeding on pasture, or what the potential that they could feed on pasture could be.

And I'll go -- I'll use one model or the other depending on which concept they are more open to.

MEMBER JAMES: Okay. So that would have to be logged, then, for each cow, as you increase and decrease the herd?

PANELIST McCRORY: Right, yes.

MEMBER JAMES: So, how large are the farms that are currently using that system?

PANELIST McCRORY: Anywhere from 30 cows to 200 cows, in Vermont. And I guess I would have to defer to NOFA New York to find out what range of livestock farms' sizes are using that current system too. I'm not sure.

MEMBER JAMES: Do you have an estimate? Say, if you have a 500-cow farm, approximately --

PANELIST McCRORY: I think this calculation sheet can be used for any number of farms -- for any livestock-size farm. So, whether it is 500, 5,000, or 20, the

calculation sheet should work just as effectively.

MEMBER JAMES: Okay. Thank you.

PANELIST CROPPER: I might add, there is actually a farm in Wisconsin, near Mineral Point, that they've run approximately 1,200 to 1,300 head of cattle on pasture for several years. I don't know that they are organic; I don't think they are, but even so, whether it is organic or not, that's a pretty substantial herd size to run on pasture, and they've been pretty successful.

FACILITATOR ANDERSON: Dan?

MEMBER GIACOMINI: Dan Giacomini, NOSB. A couple of questions. First of all, for George. Can you explain the advantage we have of the cow harvesting the forage and depositing her own nutrients back, recycling, versus man harvesting and man depositing them back in a self-contained facility where the manure and urine would be going back on the farm? And then I have some other number of

questions over here.

PANELIST KUEPPER: Yes, in fact, I had thought about talking a little bit about that because, you know, in theory, yes, you can do that in an operation. It's often done with non-ruminate stock, where all the harvesting is done. Everything is taken, fed, the manure is captured, and it is returned to the land.

In terms of nutrient flows, that's perfectly fine, and in some cases, I could conceive of where it might work better for the system, if you were looking solely at nutrient flows.

I think this is where a lot of the animal health issues come into play of whether, you know, animals are more healthy in a pasture environment, which I tend to believe they are. Again, I'm not the expert in that area.

I think there are also issues of, you know, since we talked about, you know, the

whole range of environmental issues, you know, there are certainly energy issues involved in a system that is dependent entirely upon mechanical harvest and feeding as opposed to animals that, you know, have four legs and can walk out there and harvest a big chunk of it themselves.

So, you know, I think taking the whole picture into account, any degree to which you can turn the system over to a grazing system increases the overall sustainability and benefit environmentally, and I feel, you know, in terms of the health of the animals, that there is definitely a benefit to that. And certainly, my interpretation of standard is more consistent with that.

MEMBER GIACOMINI: Thank you. My second question. Mainly to Lisa and somewhat to Jim. The numbers that you used over in your equations, and mainly in your first example there, I'm interested in the

assumptions you make and the implications of those.

You list 3% dry matter -- 3% of body weight is dry matter intake. There is a tremendous amount -- a tremendous amount of factors that go into dry matter intake, from age of the animal, lactation number, body weight, milk production, stage of lactation, a number of factors in the nutrient requirements for dairy cattle -- dry matter intake is not simply one sentence of 3% of 4% or 4 and a half percent, it's nine pages.

Also, on pasture, I've seen pasture book values anywhere from 18 to 25 percent dry matter. Do you propose that we just use a certain number of set book values, or do you really expect that we or should we actually be working on the individual dairy numbers, where in some cases, for instance, with a large dairy, they have multiple strings.

High-producing string may be

closer to fifty pounds of dry matter, and depending on the dry matter intake pasture, it could be pushing 100 pounds of grass per day. Can you talk a little bit about that -- that kind of an implication and what you see that we should be doing, and sort of, if -- you know, I mean, if somebody is at 4% and we are figuring three, or the other way around, and they end up at 25% instead of 30 of intake, then what do we do to them?

PANELIST McCRORY: Well, what I gave on the first flip chart was just an example of one group of animals at an average of 50 pounds of milk production per cow, and I think -- I'm just throwing out some ideas. I know that there are definitely worksheets available so that people can actually calculate, if they have a higher-production herd or if they are grazing their high group -- early lactation cows in one group and their mid-lactation cows might be grazing in another paddock, they can manage their groups in such

a way.

But we could have a chart that producers could utilize to, you know, based on the butterfat, based on the pounds milked, based on the average, you know, body weight of their herd. They might fall under a different percent body weight total percent dry matter -- or total dry matter intake based on a different percent of their body weight, based on those factors.

And there are some very handy charts and tables to help people make those calculations. Whether we have, you know, low, medium, high or whether we actually use tables and charts where farmers get more accurate in their total dry matter intake requirements, I'm not sure how detailed we should go with that.

I wanted to at least start off with a baseline, and we can determine what level of record-keeping we would want to enforce for measurable dry matter. But I

think down the line it is ultimately going to be -- I wouldn't expect that it would be totally precise, but I think it would be good. It would be better than where we are today, which doesn't have anything.

MEMBER GIACOMINI: I had one for Jim, but I forget, so.

MEMBER ENGELBERT: Kevin Engelbert. Mr. Kuepper, you spoke about the increased efficiencies of an organic operation versus a conventional, and do you have any figures based on a pasture-based system versus one where the feed is mechanically harvested?

PANELIST KUEPPER: I personally don't at this point in time, no. I have not managed to put that together, but Ann, would you happen to know if they have that at ATTRA, that we can dig that out? Do you remember?

PANELIST WELLS: I'm sure they probably do somewhere, but whether it still exists, I don't know.

PANELIST KUEPPER: Okay, yes. I'm

sorry, I don't have that at this point in time, but it's something that we should be pulling together. I agree on that.

MEMBER KARREMAN: Mr. Karreman -- saying regarding -- I think you were saying you are not sure how the animal health increases or whatnot with the pasture, and a peer review journal article --

(Whereupon, the speaker's microphone cuts out and is restored back to working order.)

MEMBER KARREMAN: Mr. Karreman, I wanted to add onto what George, here, was saying about the health benefits possibly of pasture -- is it picking up? -- in a study I did during veterinary school in the Netherlands, we were checking inflammatory reactions in cattle and seeing if we could come up with a quick test to differentiate cattle that had inflammation or not, and as one of the findings we didn't originally look for, but we found it in the data set, there

was significantly less inflammatory reactions with cows on pasture compared to cows that were confined, with P less than .105, and that was in the veterinary record in 2000, so that's a published peer review journal.

I just wanted to help you answer that question. I don't know of any other journal articles like that yet. Hopefully, there will be, and I do have a question for Lisa. You mentioned the issue of sustainability in that realm and irrigation.

I would imagine, and I think you were kind of questioning the sustainability of irrigated organic dairies, if they need that -- correct me if I'm wrong -- but in California, I would imagine there is a lot of organic row crop farms that do use irrigation, so how do we -- I know the irrigation issue is somewhat embedded in this whole discussion, so if there is row crop farms that are organic using irrigation, wouldn't that be okay for organic dairies, or not, or why not?

Whatever.

PANELIST McCRORY: I am not opposed to irrigation. The times when I start to get concerned is -- it depends on the volume of water being used for different things, and I just think that there -- we need to have a monitoring system in place so that we can have a better sense of how much of our water resources are being used for different practices and put some sort of a limit relative to sustainability on those practices.

I don't think that that would exclude irrigation, but it might exclude the use of irrigation or excessive irrigation in certain areas, and I think it would be worth having some sort of way to monitor that because I think water is quickly going to become a resource that is not that renewable. It's the next one after peak oil, I think. And we just need to stay on top of that and be able to monitor it.

MEMBER KARREMAN: Just as a

follow-up, I guess, on that and from what George was saying, and I think we all realize that if the cows are out on pasture, they are urinating and they are manuring out on the pasture -- they are kind of returning some of the water back to the pasture. Maybe you might want to answer that or would that ameliorate some of the irrigation unsustainability?

PANELIST McCRORY: Well, I've heard that argument that because the animals are out on pasture spreading their own manure and actually urinating that they are, in a sense, doing some level of irrigation that has a value in pasture regrowth, and there is definitely research to document that. And I think that is a valuable point to make on good, well-managed pasture.

FACILITATOR ANDERSON: And if I could just add to that, that is a question outside of organic -- I mean, it's for all agriculture, right. It's not unique to

organic for consideration.

MEMBER KARREMAN: But, Bob, actually, I mean, the issue of sustainability is central to organic, so that does play in, I think.

FACILITATOR ANDERSON: Joe?

MEMBER SMILLIE: Most of my questions were covered, but I would like to give the panel the opportunity to answer one of the issues that was raised in the ANPR, which is should specific animal unit stocking rates per acre be considered? No one addressed -- no one from this panel addressed that, and I wouldn't mind having input because, having some experience with the European regulations and others, that's one of the criteria or points that they have used. I just wondered what the input of the panel is on that specific question. I'm sorry. Joe Smillie, NOSB.

PANELIST CROPPER: I'll take a crack at that. Basically, I don't like the

use of stocking rate. One of the reasons why I don't, and the major reason, is that you have to know what the yield is of that forage crop that is growing on that acre of ground, and that can vary anywhere from maybe a ton to six tons, so stocking rate is -- generally, the way it's given, it's usually just an animal per unit of area, and that's not a very adequate way of determining because it is all going to vary so tremendously on what that forage production is on that same unit of area.

PANELIST McCRORY: My two cents is I personally didn't think that stocking rate is going to be an effective way of measuring, as well, because that's going to vary so much all over the United States. But we could work with a measurement of dry matter. I thought that that would be a little easier thing to account for.

MEMBER KARREMAN: I have a question regarding the stocking rate or --

last year when we were going over the guidance document, we did play with the idea of three cows per acre as a maximum, and, you know, I guess that's not exactly stocking rate.

Maybe that's density, or -- no, that's stocking rate, but with what everything else is describing within the regulations already and the guidance document, wouldn't that, if we had let's say X amount of cows per acre, aren't we or isn't it already embedded in the guidance and the regulations how that pasture should be growing and whatnot? So couldn't it work, actually? Maybe that's more of a question for the board later on.

PANELIST McCRORY: I'll say that if stocking rate was there to compliment dry matter intake measurement, I would be okay with that, but stocking rate alone I don't think it going to hold as much water --

(Laughter.)

PANELIST McCRORY: I didn't even plan that!

FACILITATOR ANDERSON: Are there any other questions from NOSB/NOP?

PANELIST McCRORY: Can I make a quick clarification or just add a little for one of the previous questions? You were asking about the first page of that determining dry matter intake, and if that proves to be a more challenging one to do, and people are contentious about -- there's different percents of body weight to determine dry matter depending on the size of the cow, the breed, the stage of lactation, et cetera -- that the back calculation method could, I think, be very effective and easy to do, which is why I gave a couple of examples.

And maybe we are just going to be adopting one methodology, but I also -- we have a couple of ways of doing it, also, because some producers lean -- it's easier for them to wrap their brain around one version versus the other, and that's why we've managed to use one or the other when we work with

producers.

But for the sake of some sort of accountability within the National Organic Program, I would recommend that you just look carefully at both and decide which one would be the easiest or the more effective one to document, and I would assume that the subtraction method would probably be the best one of the two.

PANELIST POLAN: Is it proper for me to come in here?

FACILITATOR ANDERSON: Sure.

PANELIST POLAN: All right. Is this on?

FACILITATOR ANDERSON: Yes.

PANELIST POLAN: Okay, regarding --

FACILITATOR ANDERSON: Say your name?

PANELIST POLAN: For the reporter, Carl Polan speaking, here. Your comment -- you asked her the question about the three

percent; I think that's what your question was. That's sort of a ballpark figure, you know? A reasonable figure, but we know that smaller animals -- and she used a thousand-pound animal. I'll put that in the more or less smaller category -- might even consume more than that. Holsteins will probably consume that.

So, you know, it depends a little bit on that. But on the other hand, you can't be very precise on the intake anyway, and so to use what is a good reasonable estimate for her beginning calculation is probably okay because -- well, you know, for example, if tomorrow is hot and humid, the cow's not going to eat as much.

You know, it varies so much from day to day, so it's very difficult to do that. One other thing, Lisa, I wanted to ask you -- I don't know if I found a little bit of a flaw in your conversions or not. Did you assume 20% or 20% dry matter in the forage in that

last step of your calculation to come up with the actual amount of forage consumed?

PANELIST McCRORY: Oh, to determine like the value of the pasture? How much dry matter is in the grass?

PANELIST POLAN: Yes, in your conversion into the actual intake of grass.

PANELIST McCRORY: I was assuming that pasture is about 20% dry matter, which I know is a ballpark as well.

PANELIST POLAN: So, if it is 20% dry matter, to go back to the actual intake, you would have to multiply by five, because twenty percent --

PANELIST McCRORY: You're right.

PANELIST POLAN: -- is the dry weight, and 80% is the wet weight, so you would have to multiply by five instead of four. Instead of being 36 --

PANELIST McCRORY: It would be --

PANELIST POLAN: -- as you indicated, that would be 45.

PANELIST McCRORY: Thank you.

PANELIST POLAN: That may be unimportant because the total dry matter is what you are looking at anyway, but it seemed like there was a little something wrong there to me.

FACILITATOR ANDERSON: Jim appears to be the -- have a lot of questions that relate to the NRCS standard, and I'm going to try to lump a bunch of them together, Jim, because some of them are related. We've actually got about six questions that relate to this, and first is, "How many states have NRCS supplements or supplemental tables?"

PANELIST CROPPER: Just about every state in the union has got a state supplement. There may be about two or three, maybe four, that do not because they don't have a lot of pasture left in their state. They would be the more urban states, and possibly -- and that would be the reason why they probably haven't bothered to do a state

supplement.

FACILITATOR ANDERSON: Okay, and this -- I'm going to kind of put a couple of things together. First, with regard to your discussions here today, that it is clear -- or would you confirm that this is not a recommendation solely for organic farms but also for traditional farms as well, and in the -- and if so, how do you evaluate based on what the farmer may want to start -- the farmer's prescribed rates and their intentions and their intentions to supplement.

PANELIST CROPPER: Okay, in a situation like that, generally what we are doing is we are hoping that both people have reasonable expectations of what they can get off the land that they own. There are some instances where we may come upon a scene where they have actually way overstocked, and then it is a matter of trying to work with that landowner to see, yes, I am overstocked, and I need to do something about that.

But this is all in the art of friendly persuasion. We try to work with that landowner as much as we can. If there gets to a point in time where we are just not seeing eye to eye on things, sometimes you just have to walk away from a situation like that.

FACILITATOR ANDERSON: There is a recurring theme in all of these questions, and part of it is -- do you believe that NRCS could or should produce a regional standard as opposed to so specific a state scale?

PANELIST CROPPER: That probably will not happen. The agency is -- the way it is set up, we do have a national headquarters in Washington, D.C., but each state -- each state conservationist that is appointed there answer to their congressional delegation, as well as the NRCS chief of the agency.

And as a result, they do have considerable power at that level, and the regional offices, which we really do not have anymore -- that's why we're called the

national office, even though we cover a region of the country -- that was the reason why the agency was reorganized the first time out was that they thought that the four offices, at that time, dictated too much of what the standards ought to be.

So that's why it is now left to the states to do state supplements within the agency.

FACILITATOR ANDERSON: If I didn't do anybody's question justice, it will be scanned in as it was actually written. In terms of calculating this, we might -- both Lisa and Jim -- the 30% value, and some of this will probably come up in the next round in terms of nutrition and all. Given the standard deviation that can occur and what those -- I don't know what they are -- does it make it difficult to prove that amount of productivity or DMI you are getting from the grazing?

PANELIST CROPPER: I wouldn't

think so ordinarily. One of the things I thought maybe possibly a little bit of rewording might be needed is the one statement that says the OSP shall have a goal of providing grazed feed greater than 30% of total dry matter intake.

Here's where I would change it. On an average daily basis, not -- right now it says on a daily basis, and I think there was something mentioned earlier about the fact that it might -- yeah, Carl made the comment that it might be too humid, and they just might go off feed, and that particular day, maybe they stayed back in the shade, maybe they stayed back -- depending on how your farm is set up, maybe they stayed back at the barn.

And you thought it was a good idea to get them out of the heat and the humidity. That day you might feed mostly stored feed, possibly. When you get into especially more southern climates, that gets to be a big concern.

FACILITATOR ANDERSON: And in calculating these or doing any of these calculations, there are several that allude to the fact that there are so many variables and, as you have expressed, but also the need to understand the amount of time that actually goes into milking cows and raising livestock as opposed to keeping records.

So, I think there is a general concern here about that, and if you guys could address that a little bit, it would be helpful.

PANELIST McCRORY: Well, I think that any time we are trying to get precise records of what the cows are actually consuming, we are doing our best effort to make good calculations, but I can't say that they are ever precise.

I would like to see this as -- I like the average daily basis. I would like to make sure that it is always as close to the minimum 30% dry matter during those 120 days,

so sure, if a farm on one day is at 25% and another day, they are at 30%, I'm not -- that's not worrying me.

As I was hearing a producer talk this morning, I think the bottom line is that we are getting animals out, and they are having access to pasture, and they are actually able to graze, and we are representing this organic dairy market the way it is intended and the way the consumers are expecting it to be done.

And by having something that is measurable to some degree, without exact precision, I think it's where we need to be.

FACILITATOR ANDERSON: This is a question from the ANPR, and that is -- then what about that other 245 days? Is there -- what's the -- where do we go with that? How do we help create some framework around it?

PANELIST CROPPER: I'm not sure that necessarily -- I'm not sure how much farther you could go with the rules, but

ordinarily, if the person is committed to pasture, they are going to pasture those animals as long as they can.

And in some cases, they even extend the grazing season by planting some cool-season crops like brassicas and winter wheat and things of that sort that they can -- or even annual rye grass and things of that sort that they can graze while past the time that maybe the perennial forage crops that they had were available.

MEMBER KARREMAN: May I ask something? Having read those cards before we sent them over to you, on the dry matter intake -- and a few of them asked, I think, about, like, you know, taking into account the part of lactation, body condition, and whatnot, you know, different kind of parts of lactation the cows are in.

There is nothing -- and now, you know, it might be a little difficult to nail down exact numbers like you had mentioned, you

know, given certain variabilities in each day -- there is nothing in the organic rule, I don't think, that says we have to maximize milk production and feed the cow to maximize it.

We need to optimize -- we can optimize it by using grazing, but we don't have to maximize it. So if we are going to really nitpick the numbers down to making sure that every cow gets its maximum dry matter intake and everything else with it, I'm not sure we actually have to do that. We just need to optimize the conditions for the cows and let them respond to the environment that they are in.

FACILITATOR ANDERSON: George, as far as sustainability and environmental conservation, does it make any difference if -- and you may have already answered this, but it's asked in a different way -- if the forage is harvested or grazed?

PANELIST KUEPPER: Yes, I did deal

with that with a question that a gentleman on the board here asked a few minutes ago. Basically, in terms of nutrient flows, it probably doesn't make a whole lot of difference if you've got a good system for capturing and returning the nutrients. In a system where, you know, all the forages and everything are harvested and fed.

However, that raises the other issues. The energy involved in making a system like that work because it is much more mechanized. Also, the issues of animal health -- having animals that are not out and on pasture; it's -- I'm trying to remember the terms that we referred to. Sort of the natural actions or whatever of animals are really not -- the animals are not being able to exhibit their natural behavior when they are in a highly confined situation.

And that does have implications, as Hugh pointed out, you know, for animal health. That they are a lot more stressed

under that type of environment. So, it's not a matter there so much of nutrients but of those other factors. And I will point out again, going back to the experience that we had back in the seventies, where we were first evaluating farms, organic farms, and it was kind of a unique point in time because the circumstances were not muddied by farmers trying to extract market premiums.

This was before market premiums existed in the Midwest, so they were farming for other reasons. Farming organically for other reasons. And one of the reasons I most often heard cited by farmers, I remember this until today, is that their vet bills dropped like crazy when they fully transitioned to organic systems.

And, you know, that stuck with me, and I was always so sorry at that point in time we weren't able to come up with the funds to pursue that particular issue and get a measure at that point in time, but, you know,

we weren't really talking about these grazing issues at that time, we were talking, you know, impact of organic feed.

And, you know, not putting these high demands on the producing animals, and that was imparting a lot of help.

FACILITATOR ANDERSON: We're running -- we're pushing up against three o'clock, and I would ask that there -- I have three questions that I think are very short answers, so if we could just cut right to the core. One of them is whether it's -- the weekly amount of rainfall or the daily amount of rainfall or what happens, too much rain and not enough rain, those kinds of things, over a unique season, and I do recall that you asked for a drought plan.

But what, if you talk about the 120 days, what does that mean for more temperate climates. What does that mean if it's raining too much, what does it mean if it is not raining enough in any given year

wherever you are.

PANELIST McCRORY: Well, within the -- there is already an allowance for temporary confinement, which is permitted during periods of inclement weather such as severe weather occurring during a period of a few days during the grazing season, conditions under which the health, safety, or well-being of an individual animal could be jeopardized, et cetera.

So I think within the National Organic Program, we already have something set up in the case of drought or flooding where a producer would be able to pull their animals off the pasture for a limited period of time.

FACILITATOR ANDERSON: Great, thank you. Yes, Bea?

MEMBER JAMES: Bea James, NOSB. I need a clarification from Jim on a question because before we get away from this, I think it is an important clarification. Somebody had asked about -- what about the other 145

days. I'm sorry -- 245. And you said, well, once people -- once a farmer starts to pasture, then they are just going to want to pasture all the time.

What about the people who don't want to pasture and want to be able to just utilize that 120 days and only 120 days? So how would that -- what -- how -- I guess I'm asking you to think about the question in terms of not assuming that people want to pasture.

PANELIST CROPPER: Well, if they want to do the bare minimum, I guess that's what they would choose to do. That shouldn't be a problem, necessarily, I just think that if they make the commitment and have enough pasture that they find out that maybe this is easier than hauling manure and feeding a total mixed ration every day. They might decide that maybe they ought to do a little more pasture, and that's -- a lot of times that happens.

Now, if the land base is such that they are going to be really pushed, now that's the instance that you might find a lot of situations, they might be able just to meet that 120 days because that is all the land base that they've got to work with that they can pasture animals on.

In that situation, then you've got a situation where they just can't do any more than what they are doing, and that's -- that could happen in some situations. That could be because maybe they don't have a way to get to some of the farmland that they have under their control.

The dairy barn is situated in such a fashion that you can only do the pasture that's close to the barn. It might be a busy highway they don't have any means of going across it without stopping all the traffic, and they are probably not going to be able to do that. There might be a big river or some other sort of impediment that they just can't

get to some of the land to create as much pasture as they might like to, so those situations arise from time to time.

PANELIST McCRORY: And I just add that for those remaining 245 days, what is typically required right now is that on a daily basis, the animals have turned-out access to -- so they have freedom of movement, access to sunlight. It would be that kind of management that I think would be at least a minimum for those remaining 245 days.

PANELIST CROPPER: Yes, that might be something like a rotational loafing lot. That's something that was kind of developed in Virginia, for instance. An extension agent down there promoted that idea, and that, at least, got them out of the mud. Some of these loafing lots, they are not paved, they don't have a -- maybe a free-stall barn.

They are just kind of out there, and it's okay as long as the weather is reasonably dry, but if it gets very wet and

stays wet for a long period of time, these rotational loafing lots are made so that they are usually planted with something like tall fescue. That's something a dairy cow likes, but at least it gets them out on grass and out of the mud in the winter.

MEMBER JAMES: Okay, thank you. So what I hear you saying is that if a farm sticks to the 120 days, that those other 245 days, that you are suggesting that they should definitely be outside --

PANELIST CROPPER: As long as it is not extremely cold or extremely hot --

MEMBER JAMES: That they shouldn't be in confinement just -- okay, thank you.

FACILITATOR ANDERSON: A few very brief questions for Lisa. How many farms does NOFA Vermont certify?

PANELIST McCRORY: We have over 260 producers, but of that, 106 are dairy farmers.

FACILITATOR ANDERSON: Can

certifiers be trained to enforce and implement all aspects of the NRCS document?

PANELIST McCRORY: I'm not really sure if I can answer that question. I don't have the NRCS document right in front of me. I do know that, through NOFA Vermont, we are working with NRCS, helping them implement grazing plans in Vermont, and I think that has been a really useful tool to help them actually use their templates and see how effective they can -- actual work -- how they can work actually in the trenches, creating grazing plans.

But this is our first year of actually putting that template to work. So, we're still figuring that out.

FACILITATOR ANDERSON: Great. And my favorite question of all is -- and it gets right down to the really practical side -- how long does it take a cow to eat 45 pounds of grass in a day?

(Laughter.)

PANELIST McCRORY: Well, how many licks does it take --

PANELIST SODER: Hold that question.

FACILITATOR ANDERSON: All right, okay. This one goes to Kathie.

PANELIST CROPPER: I might just let the audience know that I do have copies of the pasture -- Pennsylvania prescribed grazing standard, here, and that will give you at least an idea of what the state supplemented prescribed grazing standard looks like, and if need be, I can get some more copies run off too.

FACILITATOR ANDERSON: Great. Well, thank you very much. This has been very informative. We are going to break for ten minutes. We will be back at twenty after.

(Whereupon, the matter went off the record briefly.)

FACILITATOR ANDERSON: After all that and all that urging, I can't find my

notes. But we are going to start with herd health, and Ann Wells is going to lead. Ann is a holistic animal health specialist. She has Springpond Holistic Animal Health and is doing a lot of work on pasture and work with animals and also is involved with Heifer International, so Ann?

PANELIST WELLS: Thank you, Bob. I appreciate the opportunity to be here. Ever since raising organic livestock and working with a small Missouri, Arkansas, organic growers association in the mid-eighties, I have been intrigued with how to raise livestock in ways that prevent disease.

I had reached the point in my career that I did not want to treat sick animals anymore, and so in order to do that, I had to figure out how to keep them healthy. I quickly came to the conclusion that nutrition was the key, but while I was raising my livestock on-pasture, I was still feeding them organic hay and grain, and this was not the

solution I was seeking.

In the early nineties, I discovered the research that Jim Garish and Ron Marrow were conducting in Missouri on the use of controlled rotational grazing, and I should just say right here, there are a lot of different terms that you will hear -- controlled rotational grazing, management intensive grazing, prescribed grazing, but they all are talking about the same grazing system plan.

This was the answer that I was looking for. I've spent the last 15 years studying and implementing controlled grazing on my own farm as well as other farms for the purpose of achieving and maintaining the health of ruminants. I was very excited to see that the final rule had access to pasture as a requirement for organic ruminant production.

Naively, I thought that this would increase the number of organic grazers. It

has been my observation that a high availability of quality forage to graze and live on is the best medicine for ruminants. Access to pasture is not adequate, I now realize. There needs to be a controlled rotational grazing component within the OSP.

Even though the definition of pasture -- land used for livestock grazing that is managed to provide feed value and maintain or improve soil, water, and vegetative resources -- implies this, the regulations don't adequately describe how this is to be done.

Access to pasture without a grazing plan too often become access to an over-grazed, wheat-infested, dry or mud lot. This does little to promote animal health. It's very hard for me to pull out animal health from the overall farm system.

This is a slide that I show to all farmers that I speak to. This is their farm, and each part of their farm affects every

other part of the farm. I always start with the animals because I am talking to livestock producers, after all. The animals manure and the urine feeds the soil.

The soil feeds the forages. The forages feed the animals. And the weather is an overriding factor in many cases. And so we have the entire system right here, and animal health is a component of that, but you can't separate it out from all the rest of them.

These are animal wellness goals that I want all of my clients to have. And the first one is to manage the system to keep the animals healthy. This requires a holistic approach or, in other words, looking at the animals and the environment together.

And then the second wellness goal that I want them to have is that to change one part of the system to improve all parts of the system. And oftentimes, that means implementing a grazing plan because as they do that, then all parts of the system will

change, and the health of the whole system will improve.

So once again, pasture is the best medicine, but it requires this high availability of quality forage to graze and live on. Preventive health includes a lot of different things that are different from what many livestock producers tend to think about.

It starts with good animal husbandry practices. Just those common sense things of how do you raise a productive, healthy animal. Sanitation, observation. I spend a lot of time working with producers to teach them how to observe, first of all, what is going on in their farm, and then, what do those observations mean.

And what I have found is that even though we can observe certain things going on in our farm, we still tend to do the same thing as a result or sometimes in spite of the result. So I think that we oftentimes intervene too much with a lot of inputs,

whereas if we just changed our pasture management a little bit, if we just did a little more careful observation and thinking about those observations, we wouldn't be worrying about what can we use to treat a particular disease.

Vaccinations, naturally, are a part of it, and finally, managing that pasture to provide the nutrients as well as animal well-being. We need to remember animal well-being. It's part of the National Organic Program, and pasture management plays a big role in animal well-being.

Herbal leys is a term that was coined back in the early 1900s in the UK. It kind of fell out of favor. It is being revived, not only in the UK but in the United States. This is a mixture of grasses, legumes, and forage that have nutritional and medicinal benefits.

There is a problem with these. They have to be managed carefully because the

forbes, particularly, do not persist unless they are given a long rest period. So a lot of these pastures that a lot of farmers will go, "It's full of weeds," has got a lot of really healthy plants in it.

And these two compounds that I have on this slide, the phenols and the terpines, they have anti-parasite properties to them, and so particularly for organic livestock producers, especially small ruminant producers, these are important compounds to keep in mind and the plants that have those in them.

And this right here is just some data that was gathered in the UK in 2003 showing what some of these forbs, or what a lot of people consider weeds, have in them in the way of mineral content. So you can see that when you have a diverse pasture, and those animals are out there grazing on it, they are going to get a lot of nutrients and minerals that they wouldn't otherwise get if

they weren't out on those pastures without a lot of mineral supplementation.

So what I like my producers to do is to observe the animal and their environment. It all goes together. They've got to anticipate and plan for stresses. That, to me, is the beauty of rotational grazing. It gets these animals outside, it gets them in the fresh air, the sunlight, they are able to handle stress a lot better as a result of that.

Prevention, prevention, prevention. We don't want them treating sick animals. We don't want them to have to think about it, so they've got to prevent it, and that goes back to that list that I talked about earlier. And finally, they must improve their nutritional status through good grazing management.

Because once they do that, then a lot of their health problems just naturally go away. Transitioning does require a certain

time period. The producer has to learn it, and the soil and the plants have to recover, rejuvenate, and become sustainable again.

That can take a period of time. Usually, we consider it about three years. The cattle, on the other hand, are going to change very quickly. They go out there, they have a lot more grass to graze, they've got a lot more forages to eat on, and they are a lot happier, and they improve immensely very quickly.

Oftentimes, we find that it's just the mind set of the producer that is the hardest to change. And so what I like for producers to think about is they've got to be looking at these two things on the bottom of this pyramid. The soil life and balance and the pastures and the grazing management.

I've had the great opportunity of visiting farmers all over the country and speaking with them. I also get calls from farmers all over the country who say, "I'm

thinking about transitioning to organic livestock production. What can I use instead of antibiotics?" And I always tell them that's the last thing they need to be thinking about.

They've got to be thinking about this first. They've got to be thinking about their feeding program. Because antibiotics or any other kinds of treatment -- and it doesn't matter whether it is a conventional treatment or it's an alternative therapy -- it a Band-Aid.

And, in fact, I oftentimes say that once you get beyond water, all of these things are Band-Aids. We do a lot of changing around with these things to try to fix things. And if we spent our time fixing these things right here, we wouldn't have to worry about all of these other things.

Different parts of the country will obviously be dealing with a grazing system in different ways. We have the

different geographic regions, and that's what I just really like about NRCS's prescribed grazing plan. They've got a general federal guideline, and then they have more specific state guidelines.

So every region is going to be different. In Arkansas, there have been years that we could graze 365 days out of the year. That certainly hasn't happened though in the last year. We are in the 13th month of a historic drought. We have only been able to graze 180 in the last 12 months.

However, our animals have been out on pasture, and we have continued to rotate them around. True, there has not been much in some months. We are getting some spring growth now; certainly nothing like we have been in the past, but we are still out there rotating them around so that they get the benefit of being outside.

So, I feel that the areas of the country that can graze the majority of the

year have a big advantage because of the cost savings from feed that goes into this. And that can range anywhere from a dollar per day per cow on a -- as a veterinarian, I know that ruminants that are grazing out there on pasture are going to be healthier.

So therefore, that's also a cost savings. I believe it was George that was talking about how the vet bills go down. The vet bills go down of every person I've ever talked to who does a grazing operation. I've never talked to one who didn't say that happened.

And then, as a consumer, I want my organic milk to have come from cows that have been grazed on pasture. Thank you.

FACILITATOR ANDERSON: Our next speaker is Linda Tikofsky. She is a senior extension veterinarian at Cornell's College of Veterinary Medicine -- great, can you hear me? Linda Tikofsky is a senior extension veterinarian at Cornell's College of

Veterinary Medicine. She works with the Northeast Dairy Farms on issues of udder health and milk quality.

Her research focuses on herd health as it is impacted by the transition from conventional to organic dairying. Linda?

PANELIST TIKOFSKY: Thank you very much, and thank you for inviting me here. I have to say I have one of the best jobs in the world. I get to visit hundreds of dairy farms over the course of the year, at least consult with them, and I don't just deal with organic dairy farms. I deal with them as whatever farm comes into the office in New York, so we can be dealing with a 15-cow organic dairy, we can be dealing with a 60-cow grazing dairy, we can be dealing with a 5,000-cow confined, conventional dairy.

So I get to see kind of the good and the bad of both sides of the coin, and over the past seven or eight years that I have been at Cornell and working at my job, I've

gained an appreciation for the impact of pasture on animal health.

And I would like to just present some of this stuff to you. I have kind of a little literature review that looks at some of our peer-reviewed publications that have come back because -- for those of you who have heard me talk before, Cornell is not really the icon of organic agriculture, at least not as far as the vet school does, so every time I come back and say somebody is healthier on this organic farm, the feed are better on this organic farm, they say show me. So I'm going to show you.

So, just -- I broke this down into just a couple of brief categories. We are going to look at pasture access and its relationship to lameness, mastitis and milk quality, reproduction, young stock health, and also behavior, so I'm just going to touch on these. We're not going to dwell on -- it's not every piece that has ever been published,

but I tried to pull really the best information that is out there and probably the most reliable. It would stand up to the scrutiny of any scientific analysis.

For those of you that, you know, aren't familiar with dairy cattle or what ails them, lameness is one of the biggest problems affecting dairy cattle. It decreases their efficiency of production. It decreases the milk, it decreases their reproductive performance, it causes them pain, it increases treatment, it increases culling, and probably as far as the consumer go, this is the most recognizable animal illness if a farmer was to walk onto a farm.

They may not understand a retained placenta, or they may not understand mastitis, but when they see that cow go limping by, that makes an impact on them, so the next couple of slides will address the impact of pasture and lameness.

Couple of studies. One was done

in Switzerland by Regula in 2004, and they looked at 134 herds with varying amounts of confinement and outdoor exercise. They had tie stalls -- tie stall herds that were allowed out only in the summertime. There were tie stall herds that had outdoor access to pasture and yards year round, and then there were loose housing-type setups that also had year-round access to the outdoors and pasture.

And what they found was that the risk of a cow being lame increased as their exposure to the outdoor. So, the more cows kept inside on hard surfaces, the more lameness we're going to have.

Another group from Chile looked at the incidence of papillomatuous digital dermatitis, which is one of our most common foot diseases in dairies and particularly in confinement dairies. A lot of factors go into it from nutrition to cleanliness to other treatments, and they found that cows in loose

housing were about seven times more likely to have digital dermatitis, and cows in free stalls were about three times more likely.

Loose housing was bedded packs kept inside, but as cows went out to pasture, those issues really dropped down. Summers also looked at digital dermatitis in 2,000 -- about 2,000 pastured cows and almost 3,000 confined cows, and they found a similar thing. Cows that had restricted access to pasture were almost twice as likely to have digital dermatitis than pastured cows.

And they were more likely -- they actually found a preventive effect. That if they were out on pasture, cows that, when they were brought in during the winter season, actually were kind of protected against digital dermatitis rather than those that stayed in all year long.

A relatively new study is coming out, and they looked at hock lesions. When cows lie down or get up, they tend to bang

their ankles and all their bony parts that stick out, and so they looked at exercise frequency and duration on the amount of lesions these cows were developing on their ankles and legs.

And cows that had extended exercise period out on pasture and yards had fewer hock lesions, and one of the things they compared it to was they had totally indoor cows, they had cows that went out for an hour a day and just kind of wandered around, and then they had cows that went out and lay down in pasture, and so.

And they actually found that the hock lesions and the ones that went in and out and milled around a little bit for an hour actually had more problems than either the ones that stayed inside or the ones that were going out.

So, just letting them out for an hour to kind of tramp around may not be the most beneficial thing either. It's duration

of time they spend out on pasture. Quickly, just to look at mastitis and milk quality, this is my big thing. We measure that on farms as somatic cell counts that kind of gives us the number of infected udders we might have in a farm.

We look at the bacteria counts in milk before pasteurization and after pasteurization and a couple of tests in between, and then we measure it in terms of clinical mastitis. Clinical mastitis is when a cow has a mammary infection, and we see symptoms of it.

We have swelling, we have redness, we may have abnormal milk. So that's one of the things the farmers can see on a daily basis. They do the milking, and it gives us an idea of what's happening. Much of the mastitis we deal with comes from environmental bacteria that work their way up into the teat and create mastitis.

So the more bacteria we have

presented to the udder and to the teat end, the greater the likelihood that one of those bacteria or a few of them is going to get up there, gain access, and create an infection. That's kind of the five-minute scoop on what is mastitis.

There was a great study done in North Carolina by Steve Washburn and groups, and they actually looked at over four years of study of Holsteins and Jerseys that were out on pasture or out in confinement systems. And the cow -- confinement cows had more clinical mastitis, more mastitis that we saw, than the cows that were out on pasture.

And this is something that I see on a regular basis in my practice. Another group in Norway compared 4,000 first lactations, heifers that had mastitis with 67 that didn't, looked at what is the difference between the management between this heifer with mastitis and this that doesn't that made this one have mastitis.

And they found that heifers that were kept on pasture were at much lower risk for developing udder infections than heifers that were confined and didn't graze. We had another one that was published in the Journal of Dairy Science by Goldberg, and he just looked at the bacteria in bulk milk.

When we milk cows, all the milk goes into a central collecting tank, where it is kept chilled until the milk truck comes and picks it up, and so we look at the bacteria in that as a measure of quality. The less bacteria you have in the milk, the better.

It can be the bacteria that are killed by pasteurization, but we can also have manure-laden bacteria or things that come from that may cause some of the food-borne illnesses: salmonella, e. coli, listeria. So that's another big concern when we do bacteria counts.

Goldberg found that grazed herds had total lower bacteria counts than confined

herds during the grazing season. And they also, although it wasn't significant, the grazing herds had a trend towards better udder health. Less edema, less mastitis, lower cell counts.

Another group compared bulk milk bacteria and somatic cell counts from intensive grazing, those would be the ones that are rotationally grazing and really managed grazing, traditional grazing, where they went out on pasture -- they may not have been getting most of their nutrition from it, but they were out on a wide open space -- and zero grazing herds, where the cows were inside a hundred percent of the time.

They found lower bacteria counts, which we measure as a standard plate count, in the grazing herds, and again, they saw the trend too, that there was better udder health and fewer injuries to udders in the herds that grazed.

This is just a little data we've

collected. We've started kind of playing around with some of our records here at Quality Milk, and we look at the percentage of cows that might have mastitis after they have a calf. And we broke this down by months.

So, we have a year's worth of data up here. Cows that have cell counts greater then 300,000 are more likely -- are statistically more probable of having an intra-mammary infection. And what we can see is during our winter months -- I'll just kind of put -- these are kind of the benchmarks for New York, when we kind of get cows out on pasture. Somewhere at the end of April, beginning of May, and then they come in, depending on the season, October, November.

But if we look at cows that -- this gets kind of complicated, but if we look at cows who were kept inside during their -- the last of their pregnancy, when they are in their rest phase, when they are not milking, that's a high-risk period for getting a new

udder infection. We're not dipping, we're not flushing the teats out by the milking procedure.

So cows that actually were sent into this dry period during the winter months and kept inside, those cows will then have a calf two months later, and the ones that actually calve during the wintertime come in with more intra-mammary infections or more udder infections than the ones that get out there and are calving on-pasture. When they are out in the sun and the fresh air, the chances of them having a mammary infection after calving is much lower.

This is about 500 cows that we've looked at. As far as reproduction, the Washburn study again found that there was no difference, and one thing we hear is that cows out on pasture have lower body condition scores. They are thinner than cows that are kept indoors. They may be more muscle or fit tissue, but one time -- sometimes we use that

as a measure of, you know, what -- how will that impact reproduction on that farm.

And they found that there was no difference in those cows getting pregnant again, even though they had lower -- in the pasture herds -- even though they were thinner than the confinement herds. Another group in the Czech Republic followed herds on two farms, and each herd was split into grazing and then confinement cows, and the fertility on their pasture group, the cows that were out and not confined to the barn, had better fertility by ten percent, and that their calving interval -- the time between having calves -- what we want to aim for is that a cow has a calf every year, so that we keep the milk production up, and so they found that we could reduce the time to getting her pregnant and having another calf again by 15 days.

And finally, another group in Denmark looked at the rate of udder infection -- or uterine infections in dairy herds, and

they found that the larger breed milking herds that calved in November and April and that didn't graze had a higher probability of getting a uterine infection. It probably goes down to fitness and ease of calving and potential problems around that.

When we are looking at longevity and culling, just the little factors, the average lactation, those are the number of years that a cow produces milk on a dairy, in our conventional confinement free stall dairy, those cows last 2.8 lactations, so maybe 2.8 years, and you've got two years of investment before you actually start milking that cow before she actually becomes profitable.

We don't have this data collected scientifically for organic or grazing herds, but my suspicion is that our average lactation on organic herds are probably four or five. That'll be something interesting to look into.

But, White, who did kind of a corollary to the Washburn, used some of the

Washburn data, found that culling and death losses were higher in confined herds than in pasture. So the cows were either removed from the herd because they were ill or not profitable, or they died, and those numbers were greater in confined herds.

And they found that Holsteins kind of are lean mean dairy machine kind of cow that, you know, typically we don't think as the premium grazing cow, but cows -- Holsteins that were raised on pasture lived longer than the confined Holsteins.

Little data from Cornell. They do a Cornell dairy farm business summary. Farms voluntarily provide their records for analysis, and they found that, for grazing herds, the cull rate was 22%. For a non-grazing comparably-sized herd, the cull rate for those herds was 29%. Higher is worse.

And also, in a seven-year study that they also did, looking at veterinary and medical expenses across a time, for herds that

grazed, medical -- veterinary expenses were $61 per cow per year. For herds that didn't graze, they were $77 per cow per year.

Young stock pasture, they looked at calves that didn't have colostrum and were raised either inside or on pasture, and the pasture group had a 40% lower mortality and a greater weight gain after weaning. Probably Kathy will talk about behavior, so I'll move past that.

We see a lower incidents of food-borne pathogens and digestive diseases in cows that are on pasture versus confinement. You know, and there's always the question, the flip side, can pasture be detrimental?

We -- I haven't found any studies that actually really address the hazards of pasture. Concerns are fly control, concerns are internal parasites in young stock. We've addressed the issue of inclement weather already. Inadequate nutrition. But I think these issues are things that should be

addressed in the organic system plan and should not preclude cows from going out on pasture.

Thank you.

FACILITATOR ANDERSON: Carl Polan is from Virginia Tech. He is a dairy science specialist and has done a lot of work on animal nutrition, and so, Carl?

PANELIST POLAN: Thank you very much. It was true of some of the others. I'm pleased to be here. I don't have a long tradition with organic products or organic milk. I have a much longer experience with grazing and grazing versus confinement and that sort of thing.

Incidentally, I thought I heard confinement versus pasture here sometimes, and that's probably not a very good term, I guess, because confinement is confinement is not confinement. There is a lot of variation in how animals are dealt with in confinement, so you're kind of generalizing if you are saying

confinement versus pasture, I suppose.

My experience with pasture goes back a long ways, and it has a spotted history. A long ways because I'm getting old, I guess, and she talked about her job being the best, and mine is probably the best. I got retired.

(Laughter.)

PANELIST POLAN: But I've had very limited experience, as I said, with organic milk. As a teenager in the forties, our family produced organic milk. We didn't call it that. And we produced it until the county bought a sprayer and brought in to spray our cows with DDT to eradicate the flies.

Now, when they did that, they sprayed me and everybody else. I had no trouble with pests the rest of that season.

(Laughter.)

PANELIST POLAN: But that was the end of organic standards for us. I have other varied experiences with grazing in the fifties

as a student working university farms and later as a herd manager before I went on and got some advanced degrees.

I joined Virginia Tech in 1965, and as I look back at that time, some work was published in the mid-sixties about grazing in the Journal of Dairy Science, but little if any was published. There was a big long dry spell until we published an article in 1986, and it was a compilation of studies of eight grazing seasons that we started work with in 1975.

That was a fun thing for me. It wasn't my main line of research, and honestly, there is very little incentive in most universities to do any grazing research. The incentive is not there. The university is run more and more like a business anymore, and let me know where you get funding to do much grazing research outside of what little bit you can scratch up in the university.

I surveyed the Journal of Dairy

Science, what was online, because that's what was easy, and that was probably enough from 1980 on up to the current time, to get a view of what's been done with pasture. And it was very little, actually.

What I looked at was all the papers that mentioned pasture anywhere in them, to get an indication of what I am about to give you here. In 1990, there was one paper. 1995 there was one. 2000, there was ten. And in 2005, there were 67. Now, that one in the main line in the subject, here, you know, that's just somehow in passing, they related to pasture or talking about pasture. Some of them were directly related to pasture.

But however, that shows that there has been some more interest in recent times, and more work has been done in recent times than previously, until you go way back into the fifties and beyond. But a lot of the questions that are asked here today are hard to really document with hard studies.

Now, I appreciate what Linda did here in terms of some of the papers she picked up, because it's pretty good documentation of what she has as far as the mastitis and lameness and so on is concerned. But much of the information we have is not documented but experienced in other ways of realizing and knowing that something is probably true but not being able to document it.

Now, I've got a title here, Pasture Versus Confinement myself, so I already criticized that word. Personally, I prefer grazing as an individual in season for animals if at all possible to be used as much as possible.

It's natural for the animals. The cows -- I heard the word happy. I don't know how you know when a cow is happy, but they seem to do well with it. And it's aesthetically pleasing. We like to see it. You like -- I like to see it. I think most of you like to see it, anyway.

There's enough survey and anecdotal evidence to be convincing that cows produce more lactations when grazed. There's not much -- when they are on that. Grazed cows have less mastitis, that's been documented, and better udder health than confined cows.

It is conceded that less feet and leg problems occur in grazed cows. I think feet and leg problems begin to increase when we did confine cows. If you go back when we first -- in the sixties is when largely, we were moved into more confined situations, some before that, but it really picked up in that period of time, and, you know, it wasn't near so much of a problem.

Over time, we have no doubt bred a different cow. No doubt, we have pushed the cow differently. We know a lot more about nutrition, but we do so much with nutrition sometimes that we probably create problems with nutrition under the circumstances that we

have there.

So, okay, either these -- either foot problems, mastitis problems -- either of these may at times be the result of what is termed hotter rations. Instead of always being in confinement, maybe it's just the ration or the hotter ration that the animal may have.

And fatter cows, a lot of them get fatter in between times. They create health problems around -- or in lactation, so that's a problem that comes up as a result of that. The milkfat content of grazed cows contains about two-fold levels of conjugated linoleic acid, and that's been documented enough times. I've got some reference in the paper I handed out -- which is considered to be a healthful fatty acid.

That's a plus for milkfat in a grazing animal, but many people consume lower fat milk anyway so it reduces the consumption, probably, when they go that route. On the

other hand, cows on pasture usually have higher urea and nitrogen in the milk and in the blood, and the latter I heard it alluded to earlier, the latter is a cost factor that adversely affects milk production.

Another -- you know, if you don't somehow neutralize some of that nitrogen and it comes from high-protein pasture, it might even cost, you know, three to four pounds of milk and can adversely affect reproduction.

In any event, it utilized the cow's energy resources to get rid of that material rather than to use it for some productive purpose. Often, production in concentrations of milkfat and proteins are less, and if pastures are a big part of the diet, cows become thin, and I've got a little statement here that says that may be healthful. At least in most every animal, being a little thinner is a little healthier, usually. Even with rats, the experiments have been done and that's been shown.

So that may be healthful. Some grazers and some of you know them and some of you are grazers, tend to refer to them as more athletic or cows that are in better shape, and they certainly do appear to be that.

Time on pasture. What scientific evidence is available to indicate the amount of time cows should be on pasture? The evidence doesn't exist in my judgment. I don't think we can document it. We can talk about the anecdotal evidence, but to put a number on time or amount of hours or whatever or how much the animal might consume is a bit of a question, and I'll get to consumption later.

Experiments would have to be designed for that purpose, and I told you there is little incentive for that. They would be large and long. They would involve large numbers of animals, and they would be costly, so they are not likely to get done. Cows are very flexible, in my opinion, and

they can do well under confinement, under the right circumstances.

Pasture and switching from one to the other -- in part of the paper I pulled that's in 1986 showed that animals producing at the levels that we had in those particular studies, it wasn't a problem going from one to the other. The better question may be what is expected by the organic dairy consumer.

To me, that is the bottom line. They may be more concerned about antibiotics, hormones, or herbicide/pesticide residues than the percentage of pasture -- however, at the end of last week, I brought this subject up among graduate students, and one of them told me in no uncertain terms that her mother-in-law bought organic milk because she knew the cows were grazing on pasture.

(Applause.)

PANELIST POLAN: Well, if that's the case -- I really wondered about that, but that's what I learned, right there, you see,

from her, so if that's the case, if that's what's required and that's the market you're looking for, then that's what has to happen, in my opinion. It doesn't matter so much whether I think it makes a difference or don't make a difference in the cow.

On pasture 120 days -- what counts as a day? I think we've partly defined that as we've gone through here today. My judgment is that if a meaningful amount of pasture has been consumed, that would count as a day. Now, if that should be 30%, if somebody decides that should be 30% -- I don't know if it should be 20%, 30%, 40%, or 50%. I can tell you I don't know the answer to that. But if it should be 30%, the producers should strive for it in season.

I was partly confused when I read that and thought maybe 30% of the cows' annual intake for pasture is expected, but that would be far more difficult for the whole year because we've got the problem of all the grain

and stored feed that must be fed the rest of the year, so I'm glad to hear that season will be focused on 120 days, 30% during those 120 days.

Now, of course, we have more difficulty when we talk about the potential of drought and natural disasters. It seems that there would have to be some leniency requirements for such occurrences, and except for very large herds, economic winters, in my opinion -- I've looked at a lot of numbers on this that people have switched from what we are terming here today as confined feeding or conventional feeding to pasture -- that they are, by using their pasture resource as fully as possible, they are coming out of economic winters because it could be the little -- source of protein and other important nutrients.

So I believe that without question. A person could run an exception to that maybe if you get in a situation where it

is hard to get to pasture, but in a situation where pasture can be grown well and cows can do it, I think the economics would surely weigh out in that direction.

How to measure or document intake from pasture. Now, I think part of that, we talked about that a little bit here. Part of that depends on the precision you desire. I'm going to talk about that a little bit. I saw earlier a similar kind of sheet to the one Lisa showed here where you calculate, and I think that's, you know, for practical purposes, that may be a pretty reasonable approach to go that way.

Researchers, people like I and others, have tried a number of techniques to get a measure of pasture intake, but we have had limited success. We're not very good at it at all. Some of these techniques are pretty sophisticated. They require the use of indigestible markers or chemical markers that would not be acceptable for organic milk

production at all.

Also, they require intense methods and are very costly, so they would not be useful for the purpose that we are talking about here. There are some similar yet cumbersome ways to get estimates of pasture intake. In rotational system, it was mentioned earlier estimating herd -- before and after grazing can do a reasonable job of getting an estimate.

But along with that, that requires a little bit of training. It requires some record-keeping if you want to keep -- if you want to document it. And it requires, depending on how you do that, maybe some calibration of instruments that may be needed.

There may be -- well, I'm going to say I don't know if I'd want to do that. Most people wouldn't want to do that. Maybe. I'm not certain. Another method that might prove easier with the help of maybe a certifying agent or some other qualified person or maybe

the people already know is to estimate feed intake from the energy requirements for production and maintenance.

In other words, what goes in equals what comes out, one way or the other, and in terms of energy or utilizable energy, if you know if a producer records the intake of solid in concentrate for a herd that is being grazed, the calculated energy required for maintenance and production minus the energy supplied by the solid in concentrate equals the energy supplied by pasture.

In other words, by a difference, you can find out eventually -- you can't do it in a given day because you've got weight losses and other things involved. But over time, you could find out if it was happening. This can be converted to estimated feed intake.

Is it worth it? Maybe not, I don't know. Maybe the shortcut version is better for all practical purposes. Those --

the certifying agent certainly is going to know those producers that rely heavily on pasture, because they -- okay, thank you -- because they observe the grain intake and pasture management practices.

Those producers are relying more heavily on storage forages would be the ones that would have more concern about. The factors that affect pasture intake -- some of that has come out already. You know, we certainly want to have it accurately -- and that varies with whether it is a cool season, whether it is alfalfa, whether the sorgum -- or whether it's some cereal grains.

But pasture intake is going to be less on lesser quality pastures. Intake is affected by whether or not these are consumed before feeding, humidity and other things. Should it include forage quality factors? It would certainly help define what's there, but for the purposes of what we have, if a pasture is reasonable, I doubt if forage factors are

worth that much in the overall evaluation.

Would it improve the definition of organic milk is my question. I doubt if it would. So I'm here as dairy cow nutrition with long research interests in confined feeding as well as grazing.

Because of the increased longevity of grazed cows, I have to conclude they must be healthier. What -- which may be due to a number of reasons. Space, concentration and contaminants, and she says thank you, and I thank you.

FACILITATOR ANDERSON: Thank you, Carl. Kathy Soder has 15 years of research and production experience with grazing systems. She is currently a research animal scientist with the USDA agricultural research service here in University Park, Pennsylvania. Her research involves nutrition and grazing -- nutrition and grazing behavior of pasture-based dairy and livestock systems, and Kathy is going to give us the answer to how long it

takes a cow to eat 45 pounds of milk.

PANELIST SODER: You made me sit there and calculate a little bit, so I was doing some calculations. Yes, as I said, I am with the Pasture Systems and Watershed Management Research Unit at University Park located here on the Penn State campus.

We aren't Penn State; we're a USDA facility, and although we don't do direct organic research, we do work with interdisciplinary research and pasture-based dairy and livestock systems, so certainly a lot of what we are doing applies to organic systems.

So we've kind of been skirting the edge of the organic issues, you know, getting pulled in, getting pulled out, so we're kind of on the edge of that but certainly working with a lot of that.

Some of the challenges I've seen, a lot of what I hear you may have heard earlier today, so I may skim over some of it,

but it's good that we are repeating ourselves here because at least we know we are thinking along the same lines and maybe some common threads will come through that may be applied to the revamping of the standard.

But I think some of the challenges in adapting a pasture requirement is, one, the scientific -- sufficient scientific proof. We've all kind of said that, and that's what I was charged with. As a research scientist, I tried to come in with scientific backing for some of these questions that we are asked.

Some of them don't have -- some of them aren't answerable in science. You know, spirit and intent. We can't answer that within science. But some of the other issues, we can get at, and from what limited literature is there, I am going to try to approach some of that from that aspect.

Application of a national standard to all portions of the country, that's been brought out again and again today. That's

going to be a real challenge to put one standard for the entire country. It's going to be a huge challenge.

Enforcability. If we say 30% dry matter, how do we know that they are getting 30% dry matter. I'm going to talk about that a little later on in my talk. Along with that, objectively measuring days on pasture or pasture intake. We've done a lot of discussions of that today as well.

And then I'm going to talk a little bit -- there hasn't been much on milk quality issues. A little bit with mastitis but more of the fatty acids. I have not my data, but I gathered some data on CLAs and some other fatty acids that may be of interest in this discussion.

I am going to skim over this because we've talked about factors affecting dry matter intake. It boils down to the animal, the forage, and the environment. From the animal standpoint, time spent grazing.

The time spent grazing is limited in animals. Not going to eat 24 hours a day.

What limits it? Well, gut fill can limit intake. Usually not an issue on a high-quality pasture. It's usually not gut fill that fills the animal up first. It's usually more physiological indicators or meeting a nutrient requirement, and they are shutting down.

But an animal really, if it is on full pasture, meaning that the animal is consuming pasture and does not get any concentrate in the barn or any other feeds, eight to nine hours is optimum. And they are only going to eat, graze, up to 12 or 13 hours, even if they are not full, even if they have not met their requirements, they are going to shut down.

They've got other things they've got to do during the day. They've got to rest. They've got to ruminate, and they are going to do both of those about eight hours a

day. If you look at some of the behavior data, they prefer to graze eight hours, rest eight hours, ruminate eight hours.

And they do that, you know, in little meals and little bouts throughout the day. And there's other things they do. They have to go drink water, they have to wander around, go look at the neighbor, go socialize. There's other things that an animal does too that we don't always think about.

So an animal is not going to graze 24 hours a day, and we have to consider that when we are looking as pasture standards as well. And if we look at grazing patterns of an animal, they are going to consume about three to five major meals a day.

Two of the big meals are at dawn and at dusk. So, if we are talking about how we are trying to get -- let's just say 30%, we've been throwing 30% out there -- of their dry matter intake, we can really influence how much those animals consume by the time of day

we turn them out.

If we turn them out first thing in the morning, they are hungry, they're going to go chow. If we turn them out ten o'clock in the morning, what do they want to go do? They want to go shade up somewhere and ruminate for a while, so we can really affect grazing patterns by the time of day that we turn them out.

Here is where you made me do my calculating. Some of the research has been done. Some of the studies were -- a lot of studies have been done in England. I've been working with a group in England that's done a lot of grazing behavior research for the last ten or fifteen years, and some data out of Penn State and some data that we did on a two-year grazing study with lactating dairy cows looking at grazing behavior.

We have these neat little recorders that monitor the jaw movement, and we can distinguish ruminations, grazing; they

can even tell mooing. I can't figure that one out, but they can tell when a cow moos. But anyway, what we look at is it looks at bite rate and time spent grazing or time spent in whichever activity it is.

And then, using these boxes, we can let an animal in -- just to show you how some of this research is done, we can let an animal go -- we weigh the box, let the animal take fifty bites, take the animal out, weigh back the box, divide it by 50, and that's the bite mass.

So that's the way we get that sum of this grazing research because we have no good way of measuring pasture intake, so we have to do it in indirect measures. But an animal, a grazing dairy cow, a lactating dairy cow, will consume about half a gram per bite. And they can take about 45 to 60 bites per minute.

That's going to vary, you know, bigger bites, slower rate, because they have

to chew it more, so it depends on the pasture, the sward availability and the sward structure, and most of this data is showing these cows will consume about 13 to 15 kilos, or about -- what is that, 30 to 35 pounds of dry matter from pasture per day. That would be on an all pasture diet, some of these higher levels. Some of this data is all pasture, some of it is not.

But these cows are taking about 40,000 plus, 40, 45,000 bites a day. Whether that is pasture or whether that is concentrate, so they are taking a lot of bites. And it can be affected by forage.

So the question earlier, what was your question? About how long it would take? Okay, I did a quick calculation taking a half a gram per bite, so right down the middle, times 50 bites per minute, which is 25 grams per minute, times 60 minutes is 1,500 grams per hour, or about three and a third pounds of dry matter per hour.

So in three to three and a half hours, assuming they graze constantly, which they are not -- they are going to chew, they are going to bite, they are going to search, they are going to look up at the neighbor -- three to three and a half hours, minimum, they could consume, potentially, hypothetically consume about ten pounds.

Now, I would recommend leaving them out for that minimum because, like I said, they are going to do some searching, especially as they get fuller. They are going to start looking for the better patches and the forages they prefer. But you asked how long it could take to consume ten pounds of forage, there is your answer.

(Laughter.)

PANELIST SODER: You know, we were talking a lot about this 120-day minimum, and how will a day be defined. You know, that's one way to get at it. Another way is -- grazing until the animals are full, but we can

influence that a lot by what we feed them in the barn before we turn them out.

If we fill them up on TMR and turn them out, they are not going to graze much. If we turn them straight out of the parlor, they are going to go out and eat quite a bit, so we can influence that quite a bit.

A minimum number of hours, we were, you know, shooting there three to four minimum. I would probably put a little bit of fudge factor in there for those other activities that those cows are going to be doing, and especially if pasture quality is lower. If availability -- if it is a short pasture, if it is a sparse pasture, it is going to take them longer to get that ten pounds than it is if it is a very dense, very lush pasture.

And then, you are going -- 30%. If there is a minimum daily intake requirement. Do we set the 120 days, if they meet that 30%? Is that how you do it? I'm

just throwing questions out there. I don't have an answer for it, but some of the things that went through my mind when I saw that requirement -- how do we answer that question.

Other factors that are going to affect pasture dry matter intake, again, are stage of lactation, milk production, body size and condition -- I just wanted to mention these, just for those who may not be quite familiar with how many variables we are dealing with.

We are talking about especially a pastured animal that has a lot of choices out there. When you feed a cow TMR in the barn, they can do some sorting, but they've got a TMR in front of them. We send them out on a pasture, we don't -- we're learning more and more about how many choices there really are for that animal, and that's where a lot of our research is taking us now, with this grazing behavior.

Jim and some others have hit on

this -- the forage factors that can affect dry matter intake are quality, quantity, how much is there, how good is it, digestibility can affect passage rates and gut fills. There's a lot of factors from the forage standpoint, and environment. We've talked about these today as well.

Temperature, humidity, sun certainly have an effect on how and why an animal will graze. Time of day, supplementation -- I've already mentioned that. When we feed it, how we feed it, what we are feeding, if we are feeding a high protein versus low protein supplement, that can have an effect on grazing behavior and how those animals perform on pasture.

So pasture dry matter intake is a complex issue, and I think most people recognize that, and it is very difficult to quantify from a research standpoint. So, you know, we hear different terms thrown around when we talk about dry matter intake from

pasture. Right now, we can't measure it. We can't truly measure it.

It's not like in the barn where I can dump a garbage can full of whey, a garbage can full of feed, dump it in front of the cow and weigh it back and know how much she ate. We're only doing estimates.

Carl talked about some ways that we do that with indigestible markers, total fecal collections -- it's still only an estimate. We really don't have a good way to measure it, and it can be very subjective and very variable from day to day or depending on what the animal eats.

The best way or actually the most practical way most producers do it on their farm is looking at pre-imposed grazing heights or the rising plate meters, and we discussed them already today.

And one thing that came across to me, and I just kind of stayed quiet until I had my turn here is talking about what -- I'm

sorry, Lisa, with her equations here and Jim's measurements, and you are looking from the pasture standpoint with the pre-imposed grazing, combining those two methods to confirm one versus the other.

If we are saying here that they are eating ten pounds in the pasture, what is it saying out here in the pasture when we measure pre-imposed heights. Is it similar? We don't expect them to be identical. They are not going to be identical. Are they similar?

If one is saying ten and one is saying twenty, which one do we believe? So it's just something to put across to you about it, and, you know, is it enforceable with it being so variable and with an estimate.

You know, I originally asked is it enforceable, but maybe combining some of these methods may be a way to put this across if the pasture requirement is put in place.

Talking about the 30% dry matter

intake from pasture, at face value to say is it feasible for cows to consume 30% dry matter from pasture and produce not maximally but to their optimum, sure. Sure, it is. The research will show that. I am going to talk about -- just mention some here in a minute.

And I had asked -- some of this stuff has been answered for me today already. It was of the average over the grazing season or an absolute daily minimum, and it seems to be the latter that is coming through to me today.

And how to account for drought and weather. You know, I think there does need to be some leniency there for conditions, whether it's, you know, a drought watch is put in, you know, there's way that maybe it could be enforceable to say, okay, this region is in a drought. We are going to have to back off on the restrictions because of this because we can't expect these people to put their cows out there, and they are not going to be able

to consume 30% dry matter. I think then you run into more health problems than you wish for.

So, again, just the drought and the wet weather. Research -- the study that I did a couple of years ago as well as some others from Penn State -- we fed mainly a concentrate pellet. It had some non-forage fiber sources, some citrus pulp and some others in it, but we were getting about 50 to 60% pasture dry matter intake that maintained about 70, 80 pounds of milk.

So, your 30% certainly isn't a maximum. It's not unfeasible, it's not out of this realm. I wouldn't recommend setting it this high; I'm just showing you what we've shown in the research as an example of what we've been able to do. But these were short-term studies, you know, over several three months.

It's not a long-term over the year, what effect does that have on

reproduction and animal health and longevity of the cow. So we do have to consider those factors when we are looking at pasture requirements.

And I keep hammering on type of supplement, but I think there are so many things we don't know about supplementation in grazing and how we can influence grazing behavior, and that's one area that we are headed towards in looking at what type and how we should be supplementing these grazing cows to optimize pasture utilization.

And typically pasture -- we're not really dealing with supplementation today, but pasture dry matter intake tends to be lower with TMR supplementation than with concentrate, but again, that depends on the type and amount that's being fed, and there's a lot of variation out there in that.

And then, milk components, supplementation can help maintain milk components. We want to certainly incorporate

that and utilize that. Linda talked about the Washburn study, so I'm just going to mention that real briefly, but what Steve Washburn showed lower instances of mastitis in pastured cows in North Carolina.

Another -- a couple of other studies that I've picked up, one in Vermont and one in Hungary, showed lower somatic cells on pasture as well, but there are other studies that have shown no difference. You know, it might have been both well-managed herds, confined and pasture. You know, we can't always say pasture good, confinement bad. You could get a really good confined herd and a bad pastured herd. We can fudge the data whichever way you want depending on what you pick up, but it, you know, it's not always a matter of pasture is better.

I just got the two-minute warning, so I've got to speed up a little bit. Usually, total milkfat production decreases on pasture. A study out of North Carolina, Steve

Washburn student, did this study that showed how milkfat decreased, but what I want to emphasize is the CLAs and the Omega-3 and -6's just a little bit.

Factors can affect CLA. We know pasture can increase CLA, but we can increase CLA in the barn too. We can do it through feeding different fatty acids and stuff, so it's not something that's unique to pasture. We just need to keep that in mind.

A study by Tilak Dhiman in Utah State, where he had a controlled, confined herd, a third pasture, two-thirds on total pasture, 100% pasture, and you can see what happened to the CLA. This is compared -- increased compared to the control. So, we doubled the CLA whenever they were consuming a third-pasture. 350% when they were two-thirds, but he had a 500% increase when they were on full pasture. No supplementation, full pasture.

But the other side to this coin is

that what happens whenever those cows went on pasture. The study was also done at Utah State. The cows went on pasture, CLA started to increase, and it took about 25 days to reach the high level. Cows were taken off pasture right here. Look what happened real quick. So consider that 245 period. We lose that benefit real quick.

Something else Tilak -- I found this quote just this morning on the internet and couldn't find the study to substantiate it, but he says, "Older cows produce more CLA than younger cows. Specifically, a cow that has gone through four lactations produces more CLA than she did when she was younger. So there's something to say about, if we have longer longevity in these cows, and we are trying to increase CLA, you guys can add up the fact there.

Omega-3 and Omega-6 really quick. Again, Tilak Dhiman, a third, two-thirds, and full pasture. Omega-6's were very high when

they were fed a third pasture. If you look at some of the CDC data in that, they want to see about a one-to-one ratio of Omega-3's and Omega-6's in the total diet. Well, that was on a full pasture diet. No supplementation.

Probably not economical, probably not environmentally sound in our system. New Zealand has been doing it, but not necessarily the best for our system, but I don't know if we can necessarily say it's a whole lot better whenever we are feeding if we are doing a third pasture, thirty percent pasture. Omega-6's are pretty darn high, and that's the one that's the bad fat compared to the other two.

So, to sum up real quick here, my last slide, factors to consider. Regulations need to be measurable and enforceable. You know, we can get a lot of subject in measurements, especially when it comes to pasture, but we just need to do it and make sure it's worded properly. Measure versus intake and some of these other things that

we've mentioned today.

We want to make sure stricter regulations don't exclude too much of the population. I know there's a lot of things we want to include, but just make sure that we can maintain that population base to maintain a viable market. And if it is decided that you can't put that in, for some reason, sub-market pasture raised within the organic standard.

I know there are people doing that now, but it's just another thought to throw out there. If it's not across the nation, you know, there are certainly groups that get together, co-ops and market specialty products. There's -- I know there's some co-ops out there doing that already.

And again, we just have to consider what's happening during that non-grazing season, and especially with the CLAs and some of the data and showed. And I'm getting the hi sign over here, so I'm going to

be quiet and sit down. Thank you.

MEMBER GIACOMINI: Dan Giacomini, NOSB. I have a number of questions, and I will try and be as succinct as possible, so how long this will take will depend on you guys, I guess. Can any of you address where the 120/30% came from? Can anyone address where the 120 days/30% came from?

PANELIST SODER: The first I saw it was in this document when it was sent to me, so I don't know.

MEMBER GIACOMINI: Let me see. Linda, if a large part of the country would have to really push to reach the 120 day/30%, would we be increasing the amount of detrimental effects that we see on cows on pasture in those situations?

PANELIST TIKOFSKY: I guess I don't understand your question.

MEMBER GIACOMINI: In the areas of the country --

PANELIST TIKOFSKY: Right.

MEMBER GIACOMINI: -- that would have to really be pushing to achieve 120 days/30% intakes, would we see an increase in the detrimental effects of excessive pasture in those situations? Would we see more cows with really bad body condition? Would we see more cows with low production and reproduction problems?

PANELIST TIKOFSKY: I can't answer that. I'm not a nutritionist, but I think -- I have to tend to agree with Lisa, somewhat, as we have to think about the sustainability of the whole system and what those areas of the country are best suited for. I don't think -- I would like to see cows on pasture, and since I'm not a nutritionist, but I seem to get a sense that 30% is probably doable in most parts of the United States.

You know, I would not be averse to some of the supplementation on pasture. I would like to see cows outside and get the benefits of being, you know, on pasture and in

the fresh air and the sunlight. So, I can't say if we would see detriment.

PANELIST SODER: Can I jump in on that, just real briefly?

PANELIST TIKOFSKY: Sure.

PANELIST SODER: Obviously, if they can't make the 30%, if it's a time of the year or if it's a drought situation, they are going to be supplemented. They are going to be bringing out some stored feeds and feeding them, and they may not make their 120, but, you know, nobody is going to starve their cows to make that 30 -- well, I shouldn't say nobody. Good managers are not going to starve their cows to make that 30%.

You know, if that means they don't make it, they don't make it, but they've got to look at the animal first, and then the sustainability of the system as well, but, you know, unless I misunderstood your question, you know, people -- if there is no pasture available, obviously, you are pulling out

stored feed to keep those animals fed.

MEMBER GIACOMINI: Yes, the problem with that is that what is the definition of a minimum requirement for certification, then? That's one of the things we're having to address in passing on to the NOP.

PANELIST POLAN: One comment on that. Obviously, you are going to have to feed cows, and, you know, that may be supplemental hay or supplemental silage, but if they are out on the pasture, out on the open field, it doesn't matter if there is any grass out there or not, they are going to graze and make their rounds. They'll do it. And to me, they almost seem as happy doing that and making that round as if they was eating a lot of grass sometimes, you know? They do do that.

I have some animals of my own. I watch them every day, and, you know, unless there's snow on the ground, even though you've

got a bale of hay out there, and that's really the only feed they have, they still graze that field for whatever it's worth.

MEMBER GIACOMINI: Two real quick ones. Linda, as someone who also works with this on these things every day, I would just like to make the comment that I don't believe that it is always a case where the lower cull rate is better. When you pencil out the numbers on a 100-cow herd, you should be having 135 to 140 calvings a year, and if you are only at a 20% cull rate, I think you need to possibly be looking at reproduction or calf raising problems in those kind of situations, so I think in most cases, I agree with you, but I think there are also other situations.

Also, finally, one of the reasons we are here is because of the situations that everyone considers the abuses of this system. In any of your opinion, even in the first panel, is there a way that we could address this issue differently from what you've

discussed before to eliminate the abuses without maybe setting the benchmark so high in what some areas of the country would be considered too high but are considered viable, good, organic environments?

PANELIST SODER: Obviously, you've asked a tough question. It's one that I don't have an answer for. I mean, you are going to have cheaters no matter what. Cheaters or those who stretch the limits, whichever way it turns or both, in any system, and, you know, that's where I kind of struggle with a national standard for the whole country because there is so much variation.

A lot of these standards seem to be set for northeast Wisconsin, those types of regions. What do we do with the rest of the country, whether it be the deep south, the arid regions? You know, obviously, some of them are not going to be able to make these standards. So how do, if you do accommodate those areas of the country into the National

Organic Standard -- I don't have that answer for you, but it's a question that keeps going around in my mind ever since I started looking at these regulations and the potential changes.

PANELIST CROPPER: I'll just make one comment at least concerning the amount of forage that is actually consumed. I still think you are going to need to somehow come up with a system where it is actually measured in the field. That's harder to cheat. If you've got a two-inch stubble height out there, and that's when they are getting turned in, there's no way they are going to have the capability of consuming 30% of their diet from that pasture that's that short.

They will be taking little, bitty bites, like Kathy talked about earlier. It's not going to be anywhere near what the maximum intake rate, and then they are going to get tired of that because they can't get that much to begin with, and they will do their time,

and once the time is up and they are tired of trying to get what they can out of that pasture, then they are going to have to resort to some other feed, and that's probably back at the barn or feed box.

PANELIST McCRORY: I'll just comment. The 30% dry matter was, to my understanding, was a measurement that was figured out through lots and lots of time discussing, deliberating, between the National Organic Standards Board livestock committee and numerous organic dairy organizations throughout the United States.

There has been talk going on for the last five years. People have chewed it out over and over again. It started off at 50% dry matter minimum. Now it's down to 30%. I think -- and if you listened at all to the press conference prior to this meeting, you could have heard from a lot of different producers from throughout the United States sharing their input, and I think that 30% has

been a consensus that has been determined by the producers discussing to the NOSB and coming to a consensus that seemed reasonable.

So, I think that we should be listening to our producers, who are also talking to their consumers, and I'd like to hold on that number. I think that's a pretty legitimate number.

MEMBER JAMES: Bea James, NOSB. I have several questions, and I think to just tag off of what Lisa commented, my first question is for Kathy. You talked a lot about lack of scientific research. Would you consider the farmer testimony adequate scientific research or proof?

PANELIST SODER: I couldn't get it published for that. To be honest with you, I'll tell you what, it's getting more and more difficult for me to publish our grazing-based dairy data in U.S. journals. In the mainstream U.S. dairy journals. We're having quite a challenge with that.

We're actually having to go to Europe with some of this. I think the testimonials are great. The problem, from a scientific standpoint, there is so much variation from farm to farm to farm to farm that we don't have a control to say, well, okay, he said this, and this works on his farm, but will it work anywhere else in the world? We don't know.

You know, to go up against it, and the scientist in me says no. It's not -- on a national basis, it's not.

MEMBER JAMES: So in order to have adequate proof, do you look for the science in this particular area, or do you look to the farmer who is actually working in the field and experiencing this particular topic?

PANELIST SODER: I think the science needs to go to the farmer and get farmers to cooperate. You know, I'm not saying they don't, but to find cooperative farmers doing these things because we're not

going to have it happen at the universities. There may be a smattering here and there, a little bit is, but getting the funding for it at the university level and getting someone interested in it at the university level is a real challenge these days.

And I know Carl and I have talked about that, but, you know, there is the possibility of okay, well, we can't designate a dairy herd on this farm to conduct organic research just to set up. The farm as a big obstacle, if there isn't an organic farm available.

But there is no reason we can't go to the farm, the production agriculture, and do our research there. We've done some of that. It's a big challenge, but we can do that, and I think we need to do more of that to get more of these answers.

MEMBER JAMES: Okay, great.

PANELIST TIKOFSKY: Can I make a comment? I think we will start seeing more of

these initiatives and more research coming out. University of New Hampshire has an initiative to start an organic dairy for research for the northeast. State University of New York at Alfred, one of our campuses in western New York, is recently launching an initiative to have an organic dairy along with a regular, conventional dairy so that they can do some comparison studies between those.

College Alfred, which is in Ontario, eastern Ontario, near Montréal, is converting their 50-cow dairy herd to organic production, and actually, they are dedicating the mission of that university to sustainable agriculture. So we may not have it right now, but I think we will be having it very soon in the future.

MEMBER JAMES: Okay. Well, that ties in nicely to my next question, which is for you, Linda. If pasture decreases lameness, decreases digital dermatitis, aids fewer hock lesions, decreases mastitis,

decreases bacteria, and longers lactation periods, and you have actual study of that, what other additional scientific information is needed to reinforce pasture in organic dairy?

PANELIST TIKOFSKY: I think a lot of this was done in, you know, a lot of these studies were done in Europe. We don't have a lot of U.S. studies, and U.S. systems differ from the European, so to have things done here in this country, in our climates and in our environments and our milk regulations, I think is of value.

I don't think -- I think there is enough research that certainly points us in this direction, but like Kathy is, I'm a scientist. I want to see some confirmation. I don't want to rely on one or two studies. I want increased proof. I think we still have to ask those questions.

MEMBER JAMES: Okay. My next question is for Ann. You mentioned that you

think we intervene too much, and that we, "change pasture management. If we change pasture management, we could easily improve the health of the animal." Could you elaborate on what you mean by "change pasture management"?

PANELIST WELLS: I kind of threw that out. A lot of times, it's more -- pasture management is just one aspect of it. But it's management overall. A lot of times, when we have animals that are what we consider not doing as well as we would like them to, then we want to jump in and give them something.

And what I'm saying is that what I'm seeing is that when farmers stop and take a look at these animals and figure out what they can change either in their rotational grazing system, changing their nutrition. Sometimes it does mean additional supplementation beyond pasture. Or doing something that is a management technique

rather than giving them something, these animals improve with that alone.

MEMBER JAMES: Okay, thank you. And that's all the questions that I have, and I just want to make one comment that I really appreciate all of your expertise. It's been very useful and helpful.

(Applause.)

MEMBER KARREMAN: I just want to add on to what Ann was saying, that I find, as a veterinarian that works with grazing herds all the time, that when they are out on pasture, they are not pushed as hard. I mean, their milk production is lower when they are on pasture. I did a study, and it is statistically less. But that when they do get sick, they tend to rebound better with natural treatments that are allowed per the organic program.

And so, you know, getting all that right, you don't need all those Band-Aids, but when you do need a true Band-Aid, you know, to

help heal a sick cow, they tend to work very well because they are not pushed as hard, in general.

The other thing is that you were mentioning, Linda, about cull rates. Another study I did with Lancaster Extension, we did find, actually, significant difference in cull rates from certified organic herds that were grazing versus confinement herds in Lancaster County.

I guess one -- and also, I was -- I drew bulk tank samples from my farmers' herds two years ago by now, and the CLAs were all way high on the grazing herds in May compared to the shelf milk, so I really enjoyed your presentation, Kathy.

One question I guess, in general, is if we are going to be measuring pasture, or whatever we come up with, either with a fleximeter or fat calculations or whatever, let's say we actually go to the field and measure it; how often do we have to measure

it? Maybe you already answered this, but how often and how many -- what percentage of the paddocks during the year? Can you get some kind of baseline data for years ahead in your pastures?

I mean, how -- I know it's highly variable almost every day every week, but how often should a farmer be checking their pasture intake for the cows if we go to some percent intake or biomass intake?

PANELIST CROPPER: That depends, I guess a lot on how closely you want to manage your operation. Ideally, it should be done at least once a week. Measuring actually not only the paddock that they are currently in, for instance, but also measuring further down the line to get an idea of, okay, what is the growth rate out there right now? How many paddocks am I going to need maybe two weeks from now?

So there are some good reasons to do this just from being a really good manager

so that you know that maybe at the end of two weeks, I am going to need twenty paddocks, and I've only got maybe ten right now that are there. So now what am I going to do? Well, that either means that I'm going to have to increase, maybe, the level of supplementation in that case.

Maybe bring another field in line. Maybe I've got a second growth hayfield over here that I could use that as pasture because maybe I don't need this much stored feed now that I've gone to the pasture system, so that you've got some -- you have some idea of where you are going with this thing.

Because a lot of the times, what happens in rotational pastures, we have this thing that we call train wrecks, and that's just not looking ahead, not measuring that forage enough in advance to know that, well, I'm coming to the end of the railroad tracks, and I don't have any way to get out of it now, so what do I do?

MEMBER KARREMAN: Do you think that's -- can you translate that or apply that year to year, or do you really -- because I'm thinking of like, you know, whatever comes out of all this, there is going to be an inspector there once a year. There's, you know, the certifier has got to verify it, so are we going to ask the farmers to do weekly measurements? Because that will drive them nuts.

PANELIST CROPPER: Yes. It could.

(Laughter.)

PANELIST CROPPER: Again, like I said, it depends a lot on the manager and what they are willing to do, and that is probably ultimately going to be a decision on just how much paperwork you want to have involved in this project.

If you say once a month, that will become probably what will happen, and I'm not so sure if that's a good way to manage pastures. I think you really should be doing

it on a more frequent basis just for your own -- just for your own management and your own edification of where you're going.

I guess I just have to leave it at that.

PANELIST POLAN: Yes, I'd like to comment there a little. I think, ideally, what he says is right. I wouldn't want to measure my pasture very often, though. I think once you do this, and you get experienced, you know how much pasture is out there.

Now, if you, say, take a scheme like this from over here on the chart, and you feed an animal so much silage, if that's what you are feeding, and so much grain, and that provides 65 or 70% of what they need to produce that milk that day and put them out there, aren't you going to be sure there is enough pasture out there for them?

I think you will, if you want to sell any milk. If you want to produce any

milk. So, if you honestly put that value down and make sure the pasture is there, whether you do it by measuring method or whether you do it by the pole and eyeball method with enough area, you make sure there is enough there. Otherwise, you are going to suffer in the milking parlor.

PANELIST SODER: I also think it's really critical for the farms that are running right on that 30% are limited land base. They may not have that extra hay field, or they don't have that extra, or if they are feeding at 50% pasture, they can cut back to 30 if they need to feed some extra silage or something to get through a low production period.

Especially for new grazers and those running real tight, running right at 30%, really need to watch, budget, their forage. You know, I think what Jim says is probably what somebody needs to do to get that pole and eye before they get started.

PANELIST McCRORY: I would also add that, you know, inspections have been once a year, and they don't always happen during the actual growing season. You could be inspecting a dairy farm, and there is snow on the ground, and you are not going to see any regrowth.

So, I think some sort of calculation to verify how they are figuring out the amount of pasture that they need and whether or not it is available -- there could be some sort of check sheet format that a producer could fill out to just kind of verify any changes in ration over the growing season that could be, then, looked at by the inspector as part of the paperwork requirements.

MEMBER CAROE: Andrea Caroe, NOSB. I have many questions, but I will hold them to two. My first question, and I would like you to elaborate on something that you said regarding it may take three years before the

pasture is truly efficient, or -- I don't want to put words in your mouth. I caught the three-year mark, and I wanted to know what you see happening in that three years in order to reach that optimum point.

PANELIST WELLS: Jim and Carl may want to chime in here because they are more the experts in that area, but what I've seen is that when someone starts dividing up pastures, rotating their animals around and resting the pastures, that first year they just see this explosion of grass growth. And almost everybody says, oh my gosh, I need twice as many animals because I can't keep up with all the grass.

The second year, because they have really started cleaning out some of the less desirable plants because the animals are eating all of them, they tend to open up pastures. You end up having bare areas -- or, I shouldn't say bare areas, but you have a more open pasture because the animals are

grazing everything off.

And so, you get a lot of weeds in there, and the pastures look really rough, they are harder to manage, and a lot of producers go, this isn't worth it. But then, if they will continue on to that third year, then they start to see that pasture stabilize.

They begin to get a lot more desirable plants in there. They will tend to get more clovers in there, they will get more grasses, and it becomes easier to manage. And so, by the time that third year comes, then the pasture tends to have stabilized and is much easier to manage.

But they have to get through that second year, which can be the tough year.

MEMBER CAROE: Well, then, part B of that question, not my second question, but part B of that is, then, is there an opportunity that organic growers may have a hard time meeting a new requirement if it is going to take them three years? Will there be

an economic disadvantage to them implementing pasture for several years?

PANELIST WELLS: Well, I would hope that any current organic farmer right now already is doing at least some limited grazing, at least has some access to pasture, so they are already part-way there.

The beauty of all of this is that for somebody who is transitioning in, if their land has to go through that three-year period, then they are going through everything all at once, because not only are they having to lay off the prohibited substances on the land for three years, it takes three years for that land to stabilize, and it also takes about three years for a person to really learn how to manage a grazing system.

MEMBER CAROE: Okay, then my second question is for anybody on the panel that wants to answer. We are, right now, looking at a minimum of 30% dry matter intake with a minimum of 120 days of pasture. Could

you tell me, is there an advantage of that over a ten percent dry matter intake over a total calendar year, on average? And allowing producers to, you know, give them incentive for efficient pastures so that they get that dry matter intake.

PANELIST WELLS: My concern with the ten percent across the calendar year and not on a day-by-day is that that rule could be abused.

MEMBER CAROE: How so? Explain that. I mean, I'm not advocating one way or another, but I just want to know how that could be abused because, you know, 30% over a third of the year or ten percent over the entire year -- isn't it a wash?

PANELIST McCRORY: No, I think that it needs to be clearly defined that it is 30% dry matter per animal per day so that we know that the management is happening for a minimum amount of days with a management that we can all support and understand.

And if it is, say, ten percent over the whole calendar year, ten percent, then there could be, you know, certain batches of the livestock herd that are going to be on 100% pasture where others are going to remain in total confinement, and over the average, it's ten percent or whatever that percentage is.

Now, if you are just saying, you know, ten percent across -- over the year, and still requiring it on an animal by animal basis, I still think that there could be -- that it wouldn't be as -- I think that there are still opportunities where it wouldn't come out as nicely as the day by day management, and I still -- I just think that the 30% dry matter per day is so doable, and if it is ten percent over the whole calendar year -- I don't know, I'm going to have to think about that a little bit more to make some -- to chime in. If anybody has any other comments.

PANELIST SODER: I think in a lot

of areas, particularly here in the north, you are going to adversely affect animal welfare if you have those cows out in December or January. You know, even if it is for a couple of hours, ten percent -- if you are talking throughout the calendar year --

MEMBER CAROE: Let me clarify.

PANELIST SODER: Okay.

MEMBER CAROE: What I am saying is that the producer can determine if 120 days or 150 days --

PANELIST SODER: Okay, I see.

MEMBER CAROE: -- or 180 days, whatever it takes for them over the year to get a minimum of ten percent.

PANELIST SODER: An average across -- an average across an --

MEMBER CAROE: Right. I'm not suggesting that you turn cows out in January in Maine.

PANELIST SODER: Okay.

MEMBER CAROE: I mean -- yes, I

can't see -- but, you know, I know that there are going to be some areas that are going to be challenged, or -- again, I claim a little bit of ignorance in this, but it seems that some areas are going to be challenged to get the efficient pasture, and a producer may opt to prolong the pasturing in order to get that ten percent over the year.

It seems to me that there may be a positive on that side, and I may not -- I'm asking because I'm not seeing the negatives, and I'm trying to figure out what those could be.

PANELIST SODER: Okay.

PANELIST POLAN: It seems to me like -- I don't have -- let me first say, you know, I'm not stating one preference over the other, but if you want to control the situation, if you want the control and you want good documentation, I think that the number of days with the number of percent per day is more -- is more worthwhile in terms of

having documentation control over it for the total herd.

PANELIST CROPPER: To me, I think it would be probably easier to document a shorter period of time and have that percentage, whatever it might be. It would seem to me to be much easier to keep track of that than to try to do the average over the whole year. That's just kind of my impression. It just seems like it would be a lot easier for monitoring and actually calculate --

FACILITATOR ANDERSON: What about in terms of the animal's health?

PANELIST CROPPER: I will defer to an animal scientist.

PANELIST SODER: It's going to depend on the management. I mean, you could do it well both ways, and you could do it poorly both ways. I don't think you can answer it that way. I mean --

PANELIST CROPPER: I don't have a

preference.

MEMBER KARREMAN: I have a question. Maybe for the two veterinarians. We are talking about how to get the cows out on the pasture and how much and everything, but what specific instances would you think that cows or animals should be allowed to be not on pasture -- not talking about, like, environmental storms and all that -- but within the own -- anyone can answer it, but, you know, for the animals -- the animal itself, its well-being.

When would it be okay for it not to be on pasture? Because there will be exemptions for certain things, and I think we wanted -- one of the main sticking points right now is the perceived loophole that stage of production can be an exemption for being out on pasture, and one thing that we did with the guidance document last year is to change the stage of production exemption to be stage of life.

But I am starting to get the feeling that that's a pretty nebulous term, stage of life. So I'm wondering, you know, when could an animal be kept off pasture for its own good?

PANELIST TIKOFSKY: I think, certainly, in periods of illness, you know, where that animal needs to be observed more closely or treated more frequently. Illness has something to do with it. I do have some concerns, you know, about -- we don't know a lot about yoni's prevalence in organic herds. We certainly know a lot about it in the rest of the world.

But if we have an organic or grazing herd with a high level of yonies that's on a -- you know, that has a management plan that has decided that they are going to enroll in New York State Cattle Health Insurance or have a voluntary yonies control program, perhaps those high-shedder cows, those -- shedder cows should be at least

separated to one area of the pasture or not be allowed to mix, you know, with the general population and have a more limited confinement so that we're not contaminating pasture or young stock or that sort of stuff.

So, I think there may be certain disease states that we have to look at on a case-by-case basis to make that determination.

FACILITATOR ANDERSON: So basically, illness?

PANELIST TIKOFSKY: Yes.

FACILITATOR ANDERSON: Of various shades. Okay.

FACILITATOR ANDERSON: I have a question maybe of Jim but of everybody, and that is -- the one example you gave is, well, you know, there might be a river or a highway or something running through the farm, and if we take out the manure issues of concentration because it goes -- you can run a truck across the highway or the spreader across the highway, is there a difference in CLAs or is

it important that the animals are grazing, not feed lotted, but could they be in a green paddock, as it were, and be getting green chop as opposed to raising?

PANELIST SODER: I just had this discussion with Larry Muller last week. We haven't seen evidence of it, but it is the fresh green forage that is increasing the CLAs. So if you bring it to the cow or let the cow go at it, it shouldn't make a difference from that respect.

FACILITATOR ANDERSON: This is a question from the audience that says, "Do dairy cows that graze pastures with soils that are well balanced have the same problems with milk urea nitrogen as non-organic grazers just using urea to grow the grass?" And it goes on to talk about the management using artificial -- is there a difference in pastured animals, the milk urea nitrogen, on a well-balanced soil as opposed to --

PANELIST POLAN: It totally

depends on the protein level. It doesn't matter which source it would be, it would totally depend on the protein level in the first pasture. Now, protein in dried materials is different than protein in first pasture, but the protein in first pasture is rapidly and readily degraded and ruined, and the ammonia goes in the blood stream very rapidly, and the animal then, when it gets to the liver, converts it to urea, and that's a little bit of what I referred to earlier.

And, of course, that ends up being in the milk as a water reservoir, the kidneys as a water reservoir, so it equalizes in the milk until the kidneys empties what it's going to do.

FACILITATOR ANDERSON: Okay, sort of a follow-up on that is it -- to anyone. Is there a breed -- or not a breed, but is there -- are there flavor factors that are going into milk on pastures as opposed to those not on pasture?

PANELIST SODER: I ran into a couple of studies on that, and they were mixed. Some said yes, some said no. I mean, I think if animals get into certain plants, if they get into garlic or something, it's going to impart flavors, but from the basic forage species that seem -- preference tested, and it didn't seem to show a whole lot unless an animal was into something really aromatic.

FACILITATOR ANDERSON: Are there any useful metrics for flavor evaluation? Especially the person on the ground?

PANELIST TIKOFSKY: I think we need a food scientist up here for that.

PANELIST POLAN: We need the man -- what was his name? At Penn State that left a long time ago. He kept up with all of that.

FACILITATOR ANDERSON: There have been many questions, many times people have commented about -- not here, but overall, that Holsteins may not be genetically the most fit for grazing. A, is that true, and B, are

there breeds that are better suited to grazing than that?

PANELIST SODER: From a scientific standpoint, we don't know yet. I mean, I think through genetic selection, you could make any breed more efficient. Now, I'm not going to relate them, you know, one breed to another, but within a breed, I think you could genetically select, and through behavior.

Someone was mentioning it this morning at the press conference about grazing their calves with their -- their newborn calves with their -- the dams. Well, there's a lot of research, most of it is in sheep, but it would certainly apply to cows, from Utah State showing how much that calf or that youngster learns from the dam.

Where to go, what to graze, what to stay away from, how to balance the diet from toxins and secondary compounds. You know, I think there is a lot to be said for that, and if you are buying your heifers out

of a dry lot somewhere, they don't know how to graze.

PANELIST TIKOFSKY: And I think in the Washburn study, if we look at that because they compared the Holsteins to the Jerseys, and the Jerseys were actually more efficient grazers in that particular study. So I think, you know, maybe legs, feet and legs, I think, have a whole lot to do with it.

PANELIST CROPPER: I'll just make one comment on that. I had an opportunity to go to Ireland, and they graze all their dairy cows, and they are probably about 90% Holstein. So, I don't know. It's kind of -- that's kind of some anecdotal evidence that would show that, evidently, they've got Holsteins that know how to graze pretty well.

FACILITATOR ANDERSON: The NOP regulation requires that organic producers accommodate the natural behavior of the animals. What are the natural behaviors of ruminant animals? I think we talked about

them, but if somebody could summarize those quickly?

PANELIST SODER: Natural behaviors that they are going to spend -- they are going to split their day up, given the limitations. I mean, if you don't limit them and make them search for their food real hard, they are going to consume their feed about eight hours a day, whether that's grazing or in confinement.

They are going to rest about -- rest/sleep about eight hours, and they are going to ruminate about eight hours. And there are other activities in there. They have to go drink water, they have to go check out the fence line, they -- there are studies out there coming out looking at socialization within the herd.

You know, they socialize just like we do, so, you know, that's a natural behavior to them, whether it is to go pick on the one at the bottom of the pecking order, or whether

to go try to become top cow or --

(Laughter.)

PANELIST SODER: -- they spend time doing that, so.

FACILITATOR ANDERSON: If consumer expectations can be changed, why regulate according to the current expectation? Rather, why not regulate to the environmental health benefits that may be -- I'm having trouble with this question a little bit. You may have to help me. But -- that may be relatively fixed, and perhaps these outcomes, the health outcomes, should be more the basis for it rather than consumer expectation.

PANELIST POLAN: Health outcomes of what?

FACILITATOR ANDERSON: The health outcome -- the impact on the animal rather than the consumer expectation.

MEMBER KARREMAN: I think that's right. I would say that's how I wrote it.

PANELIST TIKOFSKY: Yes, I think

that -- I think, you know, certainly -- I'm a consumer, you know, and I want my cows on pasture from that standpoint, but animal health and animal welfare is probably overrided.

And then if you look at, you know, if you look at other countries' regulations or so in Denmark, they take animal welfare in a whole different light than we do in the United States, as far as the organic or farming rules go.

I think health should be first in animal welfare. And we will have, you know, that's, you know, that's what the consumer expects, but isn't that just right?

MEMBER HALL: This is a little out of the box, but as I'm thinking about the geographic variation that we've talked about and the ability of producers and talking about this a lot from the producer perspective, I come back to what's on the label and what we're actually able to commit to a consumer

and how that translates, and with -- if we had different state, you know, minimums, based on regional variants, what does a consumer actually -- what can we commit to them? What's their pasture minimum?

And is there an opportunity to maybe use some of the structure that we've set up with dry goods and do an organic and a made with organic and two different grades of it based on what you are able to meet in your area?

PANELIST SODER: I guess the question that raises in my mind -- is the consumer expectation in Arizona the same as that in Florida, the same as that in New York? I don't know. I mean, maybe, say, in Arizona that's not expected, and it's a regional-type label may be applicable. I don't know, but you just thinking, you know, kind of to turn that back. What is -- does the consumer expectation change across the country?

FACILITATOR ANDERSON: And

actually, a question that came out of the audience on that is very related. If -- and the gist of this is why don't organic dairy companies market organic pasture-based milk period, and/or seasonally? That's a -- almost a rhetorical question to everyone, but I think it is an important one.

MEMBER KARREMAN: Or the flip-side would be on to what you are saying, Jennifer, would be if there is going to be two different grades, let's just say, that, you know, the one that is not pastured would have to be declared versus the one that is being pastured.

MEMBER JAMES: If I could make a comment on that, also. Bea James, NOSB. I think that without directly saying "pasture-fed milk" on the label, it is implied with the brand of, you know, artwork on the label? So, speaking in pictures but not necessarily in words. And that's one of the reasons why we're all here today.

FACILITATOR ANDERSON: Why are we stuck on a minimum of 120 days compared to 200 days of grazing?

PANELIST SODER: Thinking back to what somebody asked about the standards, again, talking to a couple of folks, it seems to me, and someone correct me if I'm wrong, that the minimum of 120 days was set based on New England grazing seasons? No, it's not? Okay, then I don't know.

PANELIST McCRORY: I can answer to that. The minimum 120 days was realistic based on the climate throughout the United States, and the 120 days would be when the pasture is in full season, and the animal can actually get the allotted amount of feed, which was determined to be 30% dry matter. At what point in that growing season can they start getting that ration on a regular basis, and what is the length of time that that will last.

Well, like I said, in Vermont, we

go, you know, it's averaged 150 days and beyond, but it's not that long in some other areas, so the consensus was that everybody could live with 120 days. More than that was too hard for some areas because the season can be variable. Less than that didn't seem like it was the right way to go.

CHAIRMAN O'RELL: Kevin O'Rell, NOSB. You know, just something to consider and ponder, and I don't know the answer to this, but -- and maybe the panel on the consumer retail side of it might be more suited for this response, but as we build up an organic perception for milk with the consumer of all pasture-based, and we are talking about 120 to 150 days, and you do that, and consumers realize there's 215 to 245 days -- what are they doing?

And we have these pictures of cows on green pasture on our cartons 365 days a year. I'm just wondering what is the backlash of that?

PANELIST McCRORY: I think when consumers are traveling to Vermont to see cows on pasture, they are doing it during the growing season, so they are realistically knowing that in the wintertime, there is not much grass to eat, and they are going to be -- the feed is going to be brought to them.

But I think a lot of producers really, you know, the forage is still organically managed, and it is brought to the animals. They are being managed in a certain way that meets the standards. Consumers are buying into not just the grass, but I think consumers -- we can't assume that they are -- we've got to assume that they've got some intelligence to them too and can realistically look at the number of viable days that an animal can be out there grazing.

And 120 is a minimum, you know. Many producers are grazing, have their animals out on pasture, for over 200 days, easily. That's in Vermont. In Pennsylvania, somebody

was saying 225, 250 days. You know, they are going way beyond. But we are at least setting a minimum standard, that's all we're doing.

FACILITATOR ANDERSON: And one of the questions, Kevin, that is a follow-up on that from the last time that we didn't quite get to, but what does that really mean for more temperate climates, and is it doable?

CHAIRMAN O'RELL: Yes, I agree with what you are saying, it's just -- even if it's 120-day minimum, that's what I'm getting to. That's the minimum you can achieve that, and I think it just raises more awareness with the consumer that, okay, it's only 120 days, and I've got this 245 days.

FACILITATOR ANDERSON: If cull rates on pasture are 20 to 25% and calf loss is not an issue, why don't we have increasing herd size in organics?

PANELIST TIKOFSKY: Well, I think in my well-managed organic herds, they do have -- well, they have a limit of what they want

to be, what their land base can hold, and what their barn can house, but we do have -- we may -- if they were to keep all the calves or all the heifers, they would have increasing heifer size, but they have yet another means of economic opportunity. Because they are well managed, they have heifers to sell to people who want organic cows.

FACILITATOR ANDERSON: And one of the things that really didn't get asked in this is the economics of converting to pasture and, you know, is it actually economically an opportunity, or is it a challenge to be pasture-based?

PANELIST CROPPER: Well, I think Linda had mentioned earlier about the Cornell studies. There's also the Center for Dairy Profitability at the University of Wisconsin. Tom Kreigl has done a lot of work looking at both I think he said confinement, it might be conventional, but anyway, the difference between them and grazing farms.

And there is quite a body of work there. That would be -- if that is of interest, I would very highly recommend that you look at his work. There's, oh gosh, at least three to four years of work, and it's not just from Wisconsin, but from a lot of the Great Lakes states.

The farmers -- these are actual records. This is not some scientific model that is going off a number of assumptions. This is actual farm data that is being used to generate them. He shows quite consistently that the grazing farms are much more profitable than the confinement farms.

PANELIST POLAN: The opportunity is there, but it's not going to happen automatically. And some people go into it thinking it will go automatically, but they are not managers for that kind of situation. The ones that have been managers and have been properly dealt with -- Jerry Swisher in Virginia has worked on several, a number of

conversions, and he's got numbers to show the remarkable increase in profitability that has occurred there.

But, I can also give you some examples of people that converted to get themselves out of economic trouble, and they are still in economic trouble.

PANELIST McCRORY: And in Vermont and Maine, we are on our second year of collecting economic figures on the costs of organic dairy production, so we're doing a lot of interviews on a lot of farms collecting information that is going to be in peer-reviewed articles, and what we are finding is a lot of producers, you know, once they get established in organic production find that they raise a lot more replacements than they actually need for their farm and develop a second market.

Or, should they choose to grow, some of them are doing that as well, but I could say that a lot of the producers are

happy with the size herds that they have, and oftentimes are just maintaining that herd size. But when we are asking about cull rate, we are actually making sure we're asking about voluntary versus involuntary culls, as well as livestock that are sold for dairy replacements, or as dairy stock.

So, I'm hoping that that information will prove itself to be useful to you guys.

MEMBER ENGELBERT: Kevin Engelbert. I'd like to go back very quickly to the question of the natural behavior of a ruminant. I took that question somewhat differently. I think what the questioner may have been after is what do you think the natural behavior would be, grazing or standing at a feed bunk and consuming forage?

PANELIST SODER: I think that a ruminant was designed to graze, but there is also a lot to do with how that animal was raised and what that animal knows. Because if

you take a confinement herd and open the gate to the pasture, what do they do? They stand at the gate and wait to go back in the barn, at least the first few days or the first year or the first two years.

So, I think there's two sides to that too. I mean, what is instinctive and what -- I mean, any animal knows how to go out and drop its head and sniff around, but if you watch animals, it is a learned behavior as well. And so there's two sides to that coin as well.

MEMBER ENGELBERT: I agree, but eating at a bunk is also a learned behavior, and if an animal, a calf is with its mother out at pasture, it would have to be taught to eat at a bunk.

PANELIST SODER: Sure.

MEMBER ENGELBERT: So, I'm just making the point what do you think is the natural behavior of a ruminant? Which of those two scenarios?

PANELIST SODER: The mouth and rumen were designed to consume forage and graze.

(Applause.)

FACILITATOR ANDERSON: One last question for Kathy and Linda. Given a cow takes 40,000 bites per day, should certifiers be monitoring their dental hygiene?

(Laughter.)

PANELIST TIKOFSKY: It probably depends on the fiber in the grass and how much flossing effect it has.

(Laughter.)

PANELIST SODER: Anybody want to get started on orthodontics for cows? I've seen a lot of them with bad mouths, so.

FACILITATOR ANDERSON: How about a round for this great panel. We will be starting tomorrow morning, eight o'clock sharp, and we are going to separate the morning sessions in to three parts. First, growers. Second, certifiers, and third,

consumers.

(Whereupon, at 5:18 p.m., the foregoing matter was adjourned.)